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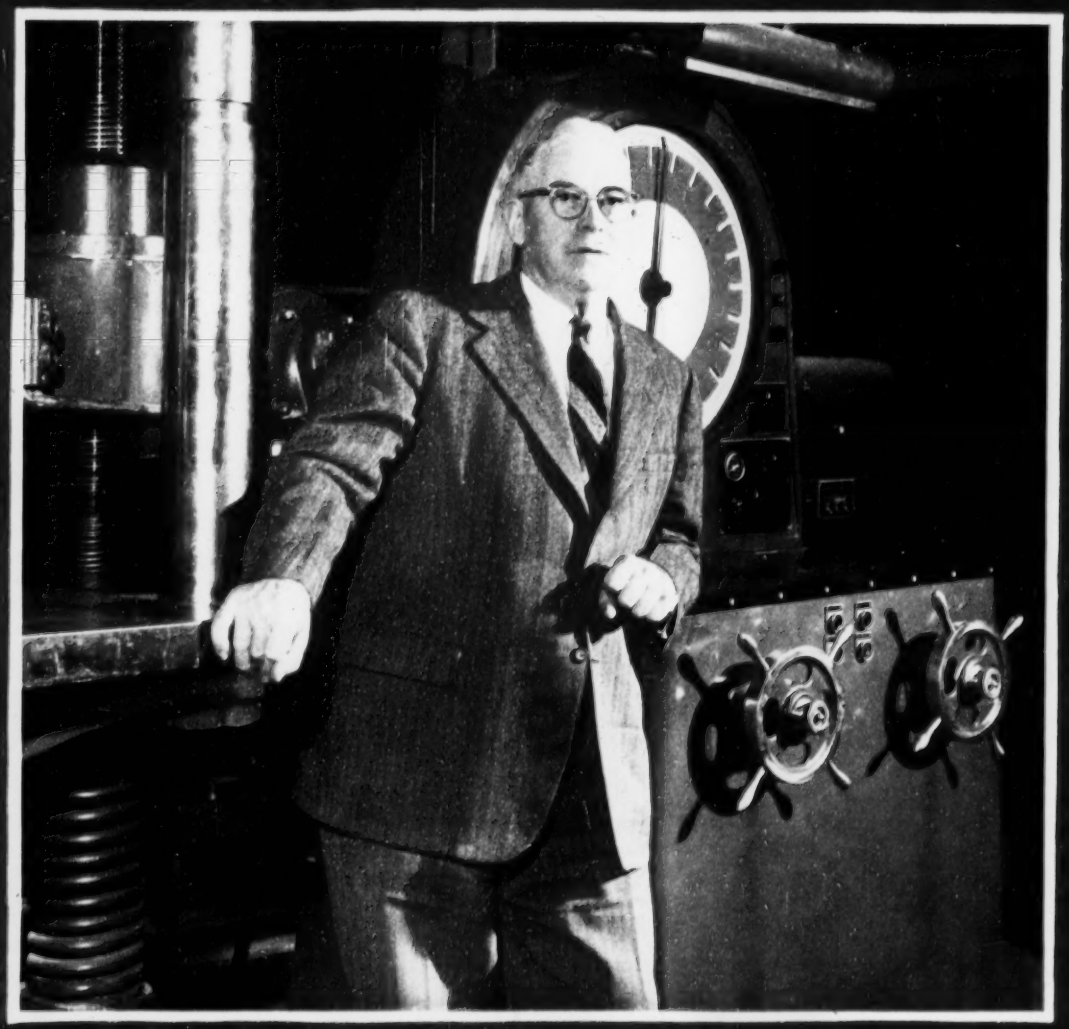

★ [illegible] months at Portsmouth (p. 3[illegible])

★ [illegible] for deep piers (p. 3[illegible])

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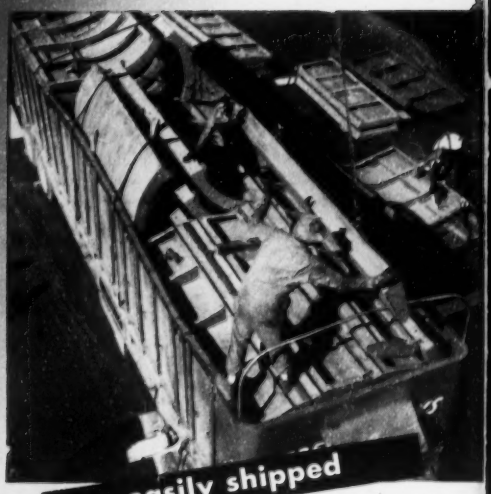

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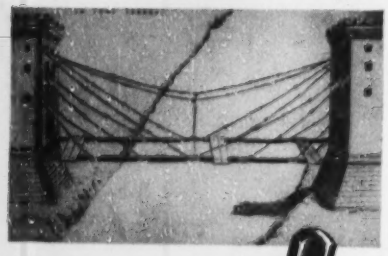

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Publisher

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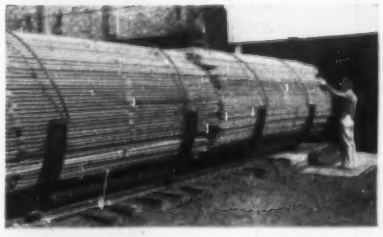

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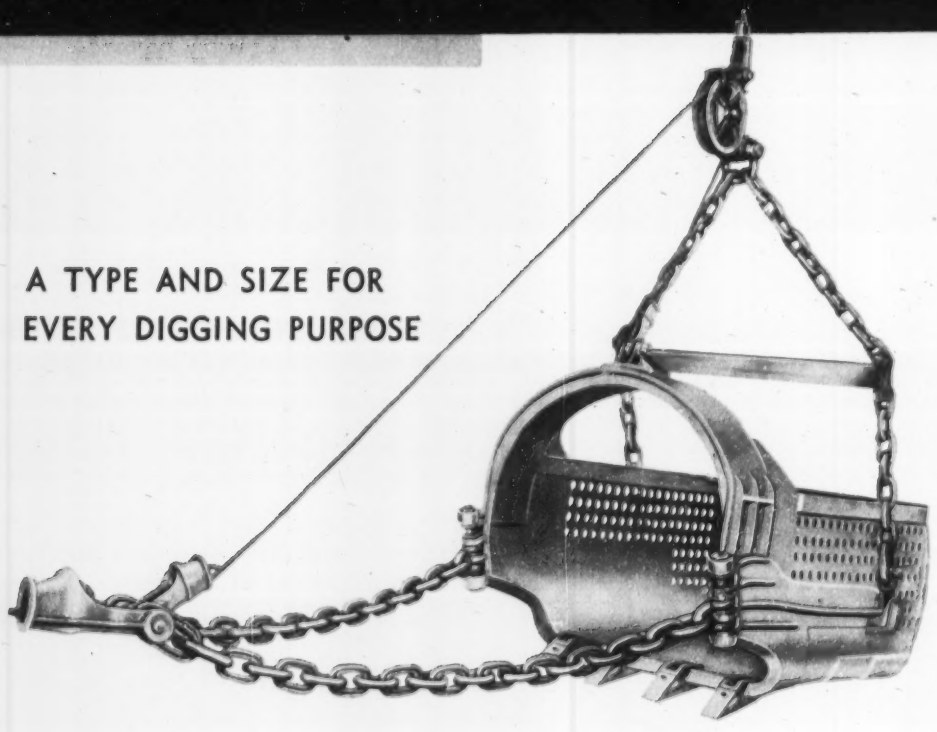

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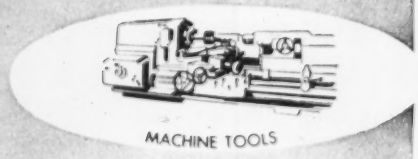

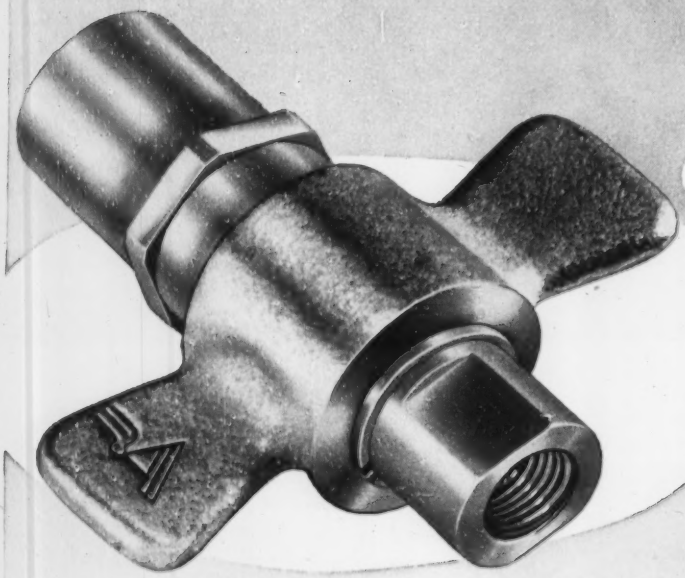

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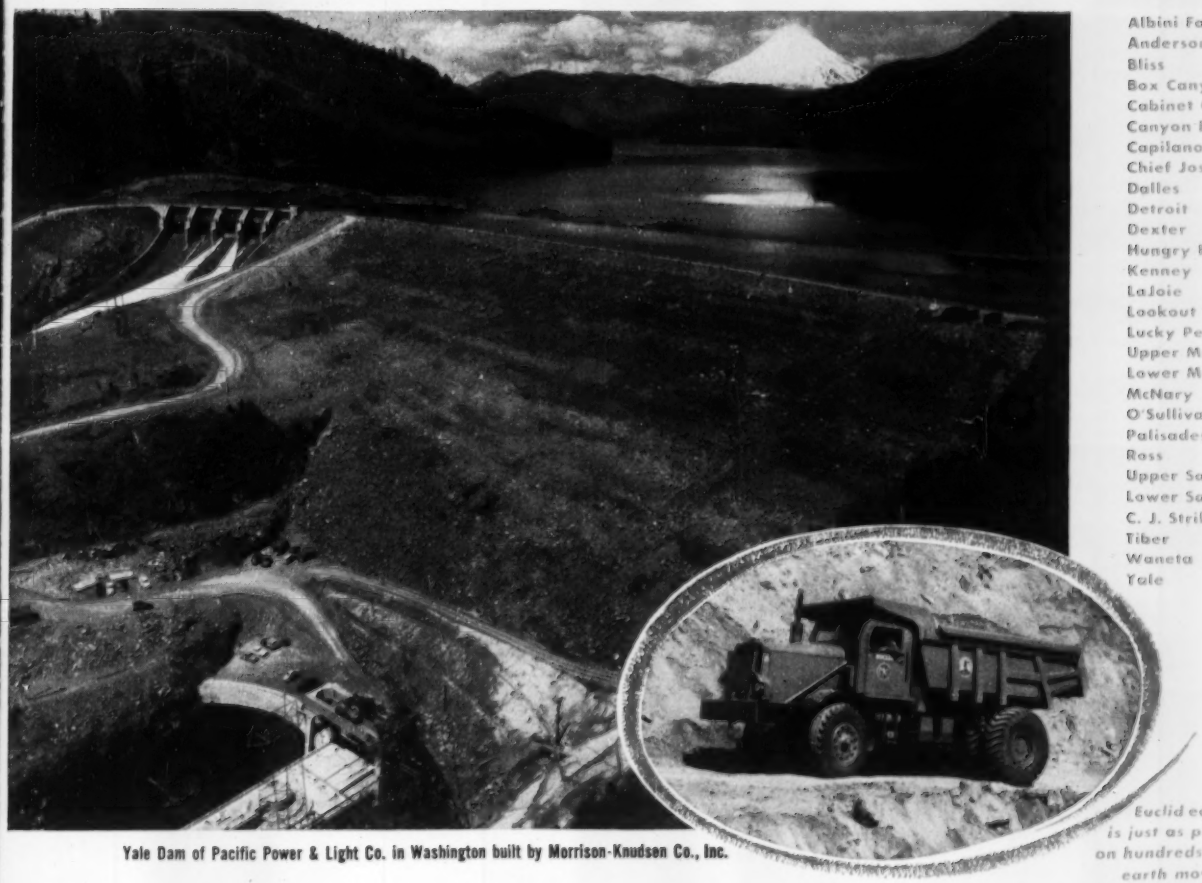

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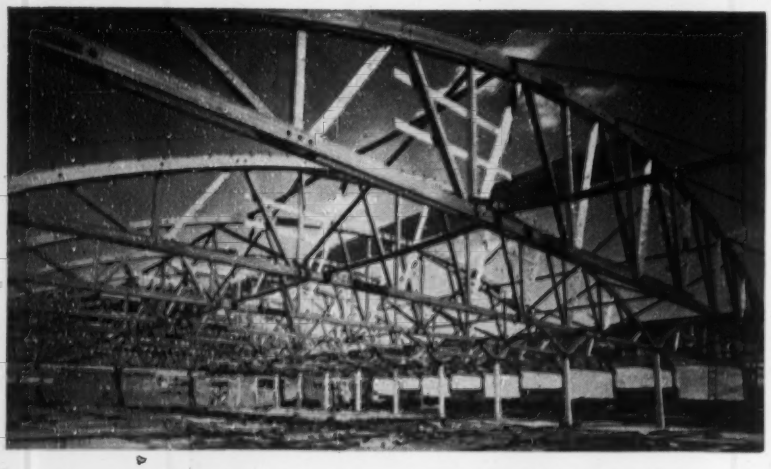

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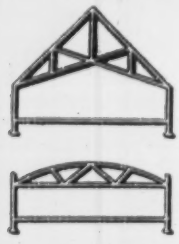

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READER COMMENT

On Field and Office

SIR: Thank you and W. D. Bigler for the Field and Office item on "Moment of Inertia Computations Simplified" (ENR Jan. 14, p. 54). Although the formula as printed is incorrect, it caused me to check and work out the correct formula. This I can use to advantage with my classes in mechanics. (A correction was published, ENR Feb. 18, p. 29.)

Regarding the note by Wm. E. Cooper, on "Computing elevations on vertical curves", same page, same issue, I do not agree that he saves any work. He must find the mid ordinate c, then the position and elevation of the summit point, then subtract each station and plus from the ordinates to be subtracted from that elevation.

By the conventional method, one easily finds the tangent elevations and by slide rule the offsets from grade tangent to curve at each station. He thus saves the computations to find summit point location and elevation, and one set of subtractions.

However, I like to see such suggestions in this department of ENR, as it helps maintain the young engineers' interest in writing up their ideas and short-cuts.

R. T. BROWN
University of Tennessee
Knoxville, Tenn.

NSPE stand on "unity" plans

SIR: This letter concerns the editorial "Less Unity for Engineers" in ENR Dec. 10, p. 172.

The National Society of Professional Engineers, and particularly the state member organization such as the Illinois Society of Professional Engineers, attempts to be a grass-roots organization, in so far as is practicable. It is impracticable for any organization to be entirely a grass-roots organization, whereby every matter that comes before the organization as to policy is referred to the membership for decision. Such an organization would get nowhere. However, from my observation, ISPE and NSPE refer matters of important policy to the membership for decision. The matter of the four plans of unity in the profession was discussed at the local level and a vote taken concerning the plan to recommend.

You say the membership of NSPE were not given a chance to decide on the Engineers Joint Council plan. It seems to me that this would have been

(*Continued on page 12*)

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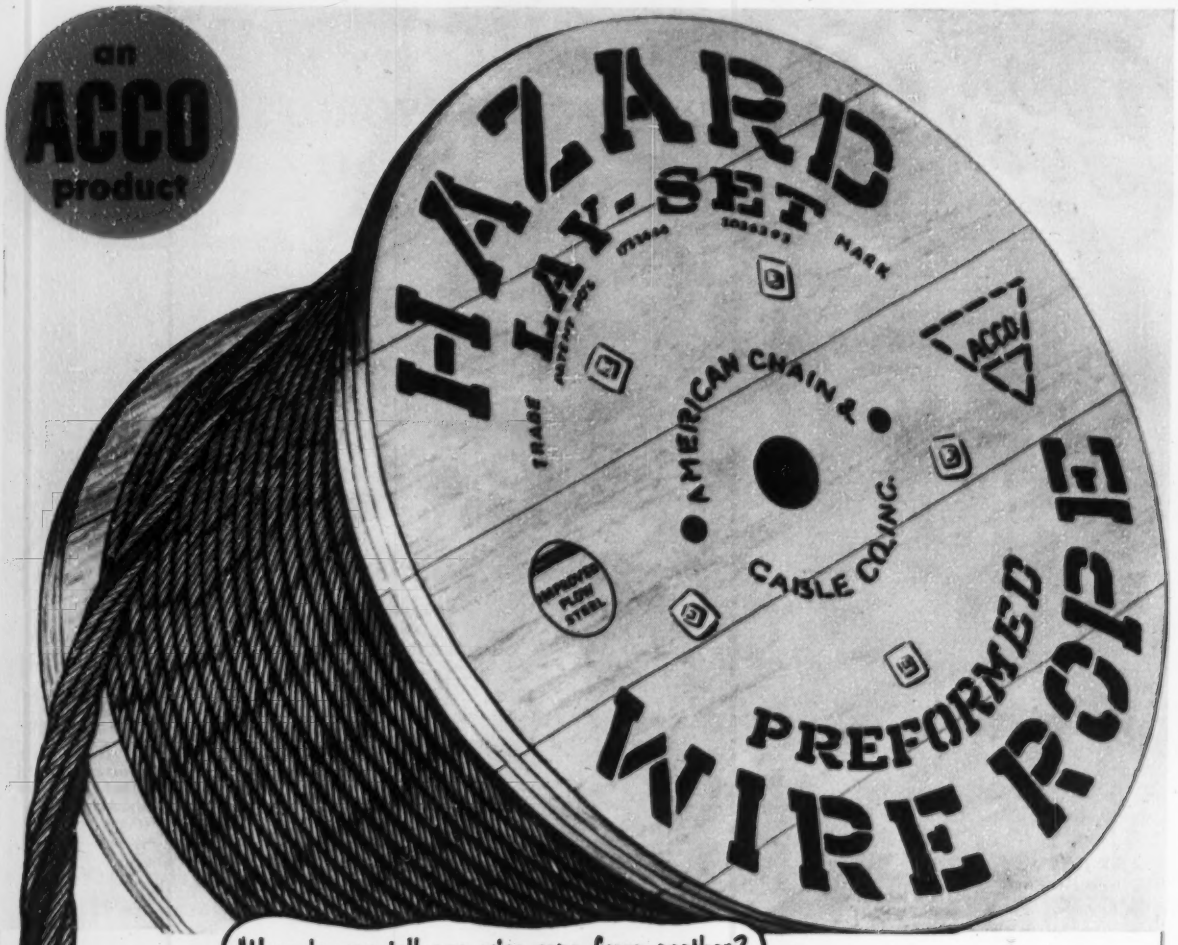

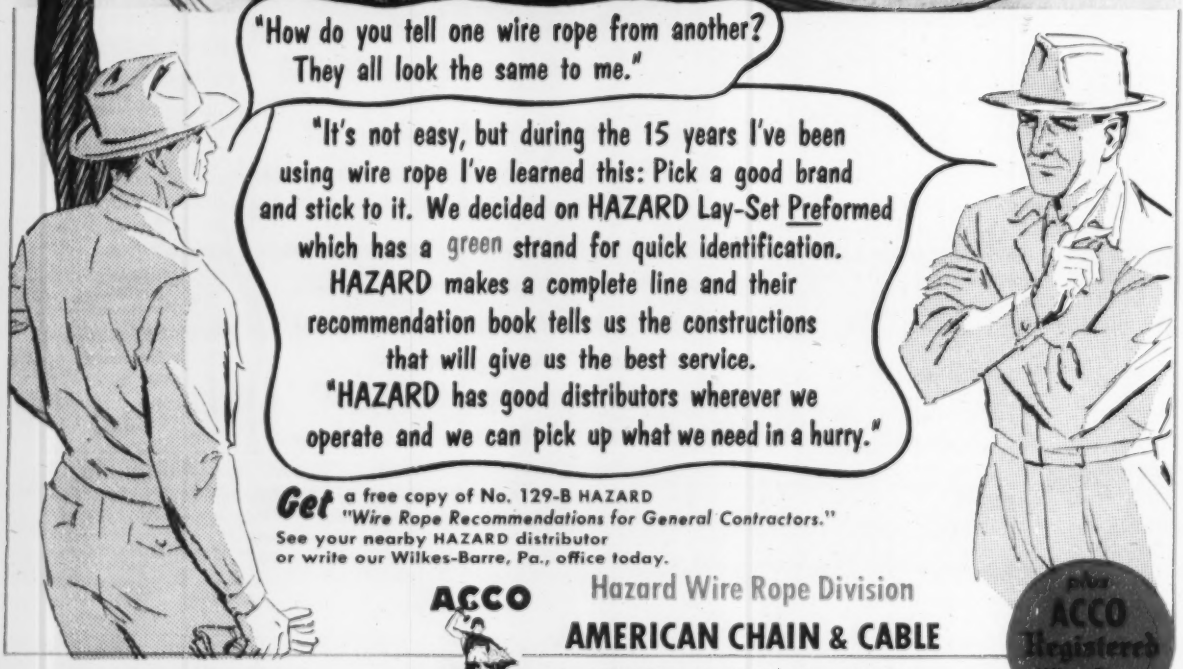
"How do you tell one wire rope from another? They all look the same to me."
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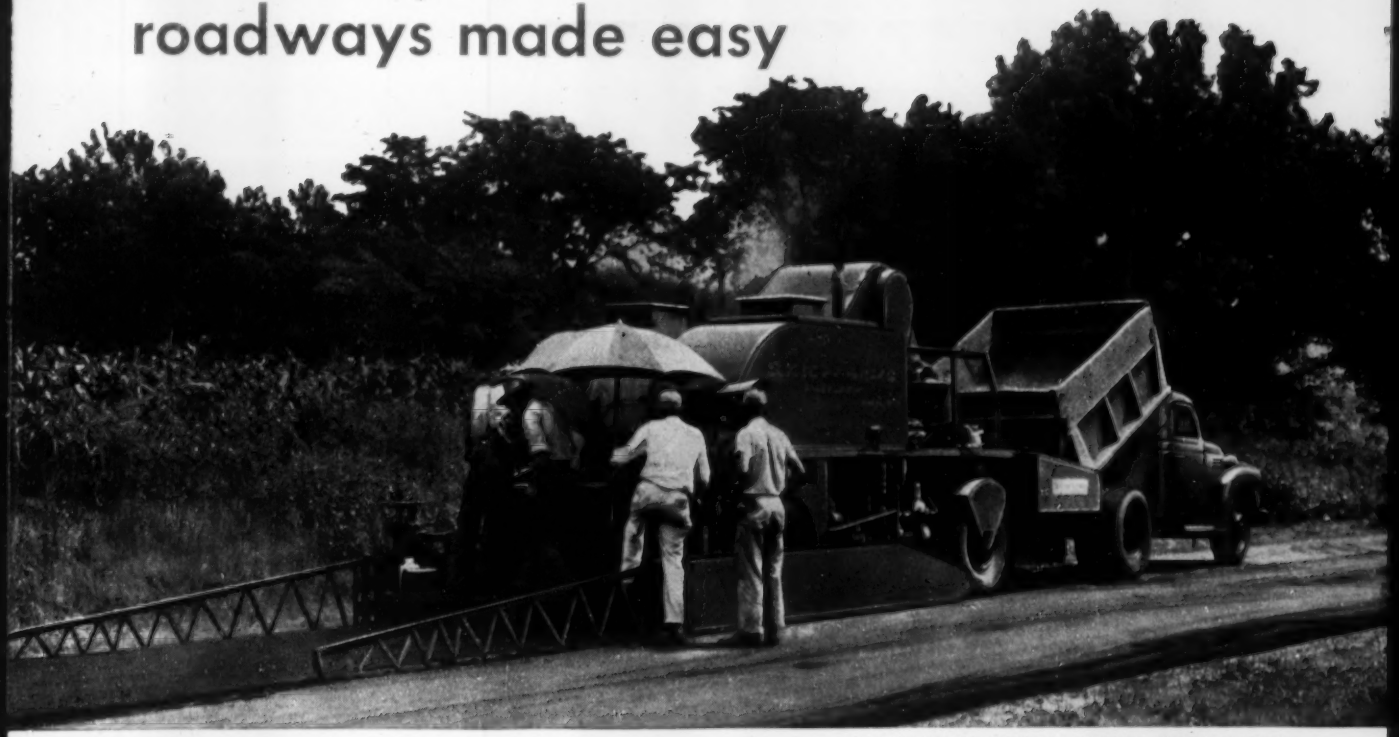


PHOTO COURTESY HETHERINGTON AND BERNER INC., INDIANAPOLIS, INDIANA

Chrysler *Power helps keep America rolling . . . at less cost*

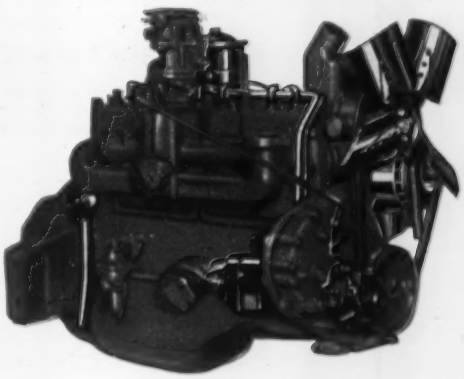
This mobile mixer-paver replaces costly man-hours with economical horsepower. In one continuous operation the unit takes in sand, gravel, stone or other road surfacing materials, mixes them in with a binder ingredient—all in predetermined proportions—and spreads the mixture onto the roadbed, to whatever depth best meets grade and crown requirements. Materials to be mixed may be fed to the unit from trucks, as in this case, or picked up from windrows with a loader attachment. The entire operation requires the services of three, possibly four, men.

The Hetherington and Berner Moto-Paver turns out up to 120 tons of mix per hour for resurfacing jobs. Paving width is adjustable from 8½ to 12 feet, depths to 7 inches. Paving speeds start at two feet per minute. Road speeds up to twenty-five miles per hour enable the equipment to carry itself from one job to another.

Two Chrysler Industrial Engines power this equipment. Travel components are driven by our Model 8 Engine whose 250 cubic inch displacement, together with Chrysler gyrol Fluid Coupling, provides power with flexibility of operation. A Model 14, powerful 331 cubic inch displacement engine, drives mixer, conveyor, spreader and pumps.

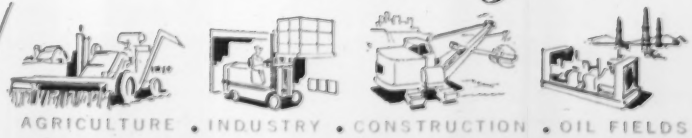
If your equipment requires power within our 230 to 413 cubic inch displacement range, engines that will operate equally well on gasoline, natural or L-P gas fuels, engines ideally suited to power take-off, see a Chrysler Industrial Engine Dealer. He can *power-fit your equipment for best performance in the field.*

Remember, too, that Chrysler Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass-production prices. If you prefer, write: ***Department 83, Industrial Engine Division, Trenton, Michigan.***



CHRYSLER ***Industrial Engines***

HORSEPOWER WITH A PEDIGREE



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IT'S THE ZINC THAT STOPS THE RUST

For long, rust-free service, specify a heavy duty sheet such as the "Seal of Quality" with a zinc coating of *2 ounces per square foot.* For heavier coatings order according to ASTM Specification A 93.

ATTENTION: MAINTENANCE DEPTS.

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READER COMMENT

a useless gesture. NSPE voted overwhelmingly for Plan D, which was not the plan proposed by EJC. Do you believe that NSPE membership would have selected one plan when they were so strong for some other plan?

How many members of ASCE, ASME, AIEE and the other members of EJC were given a chance to vote on which plan of unity they preferred? So far as I know, a mere handful of the upper hierarchy. This upper hierarchy did not want the membership to decide, because it might not be according to their pet plan.

You say that there are 150,000 engineers who belong to EJC and 30,000 who belong to NSPE. I do not believe the ratio is this much actually due to duplication, foreign membership, etc. But suppose for talking purposes it is 130,000, how many were given their choice of the unity plan? Probably some number less than 200. Undoubtedly there are many of the members of EJC who favor the joint plan, but there are probably many who do not. As yet there is no way of telling how many fal lin each column. As a result, it appears that there is no clear cut decision, based on the choice of all the engineers belonging to all the organizations. If there were such a decision, I should be more than willing to abide by it.

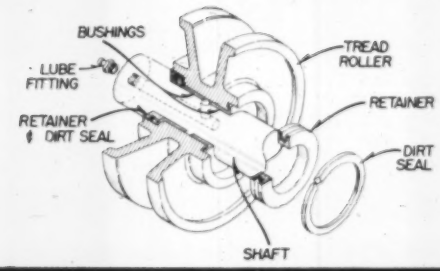
J. R. GARDNER,
Consulting Engineer,
Decatur, Ill.

Codes consider many angles

SIR: The article on "code confusion" (ENR Dec 24, 1953, p. 21) is a challenge to the construction industry as well as to building officials. What should be borne in mind, however, is the fact that there are problems other than those involving fire resistance ratings which are just as deserving of serious consideration.

The outstanding one, with its complex ramifications, involves the damaging effects of accumulated moisture within closed spaces of the skin-unit-assemblies; especially if and when they are used where they are not easily accessible. That is why they cannot always serve as acceptable substitutes for masonry enclosing walls. Condensation on windows may at times be objectionable, but it evaporates eventually without affecting the glass. Whatever cumulative adverse effect the presence of moisture may have on the window sash or frame, the results of progressive deterioration or corrosion can be detected and remedied easily.

(*Continued on page 14*)



LIMA DIRT SEALS
CUT DOWN-TIME AND MAINTENANCE COSTS

This LIMA shovel, demonstrates the importance of LIMA'S dirt seals and grease retainers.

In such work, abrasive material which wears out the bushings and shafts of ordinary shovels is excluded. LIMA seals the lubricant in and dirt out, thereby reducing friction and prolonging the life of bushing, roller and shaft.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath for dirt elimination and smoother, quieter operation.
7. Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

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Whether you're trying to budge heavy dirt in Illinois, snow in New England or shale in the Carolinas, you can depend on SHUNK blades.

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For almost a century the name SHUNK has been a byword in all parts of the world to everyone concerned with maintenance and construction blades . . . original equipment manufacturers, contractors, distributors. Let us show you why . . . specify a SHUNK blade for *your* job.

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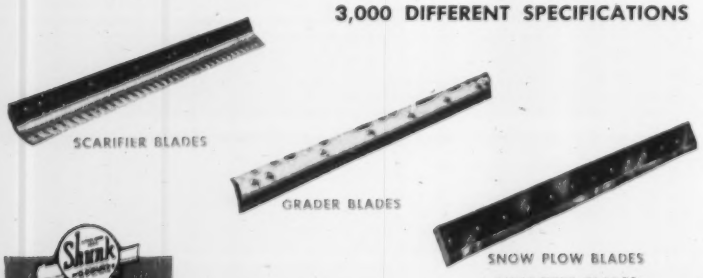

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READER COMMENT

The editorial, "New building code approach needed" (ENR Dec. 31, 1953, p. 72), served as a timely reminder for those who have been sitting by complacently while a few of us have been working overtime trying to improve the building code situation. More prodding of this kind is very much in order, if it will help to speed up the work through properly organized channels. Already much good has been accomplished through the Joint Committee on Building Codes, but much more remains to be done.

The danger of upsetting our building code unification applecart lies in disunity. There are still too many individuals who have a tendency to disregard the possibilities of the net result that can be achieved through cooperative effort.

The program of the Building Officials Conference of America calls for closer collaboration in perfecting our building code. Our record speaks for itself. But, I suppose it will take time to convince the nonconformists; or could it be that we, as members of the BOCA, are out of step?

JOSEPH P. WOLFF
Building Commissioner
Detroit, Mich.

CALENDAR

N. J. Sewage & Industrial Wastes Assn., Traymore Hotel, Atlantic City, N. J., March 10-12.

Association of Highway Officials of the North Atlantic States, Hotel Shoreham, Washington, D. C., March 10-12.

American Railway Engineering Association, Palmer House, Chicago, March 16-18.

Southern Municipal and Industrial Wastes Conference, N. C., State College, Raleigh, N. C., March 18-19.

Midwest Concrete Exposition, Navy Pier, Chicago, Ill., March 18-20.

American Congress on Surveying and Mapping, annual meeting and exhibit, Hotel Shoreham, Washington, D. C., March 22-24.

Rail Steel Bar Association, annual meeting, Jung Hotel, New Orleans, La., March 24-26.

American Power Conference, annual meeting, Sherman Hotel, Chicago, Ill., March 24-26.

Ohio Society of Professional Engineers, Mayflower Hotel, Akron, Ohio, March 25-27.

Southeastern section AWWA, Poinsett Hotel, Greenville, S. C., March 29-31.

6th annual highway short course, South Dakota State College, State College, S. D., April 7-9.

Second International Congress on Irrigation and Drainage, Algiers, Algeria, April 12-17.

American Institute of Steel Construction, national engineering conference, Hotel Schroder, Milwaukee, Wis., April 13-14.

Society for Experimental Stress Analysis, Netherlands Plaza Hotel, Cincinnati, Ohio, April 14-16.

Annual Road School, April 19-22; and Conference on Road and Street Traffic Control, April 22-23, Purdue University, Lafayette, Ind.

Conference on instrumentation in water, sewage and industrial waste treatment, Manhattan College, New York City, April 20.

Southern Industrial Wastes Conference, Hotel Shamrock, Houston, Tex., April 21-23.

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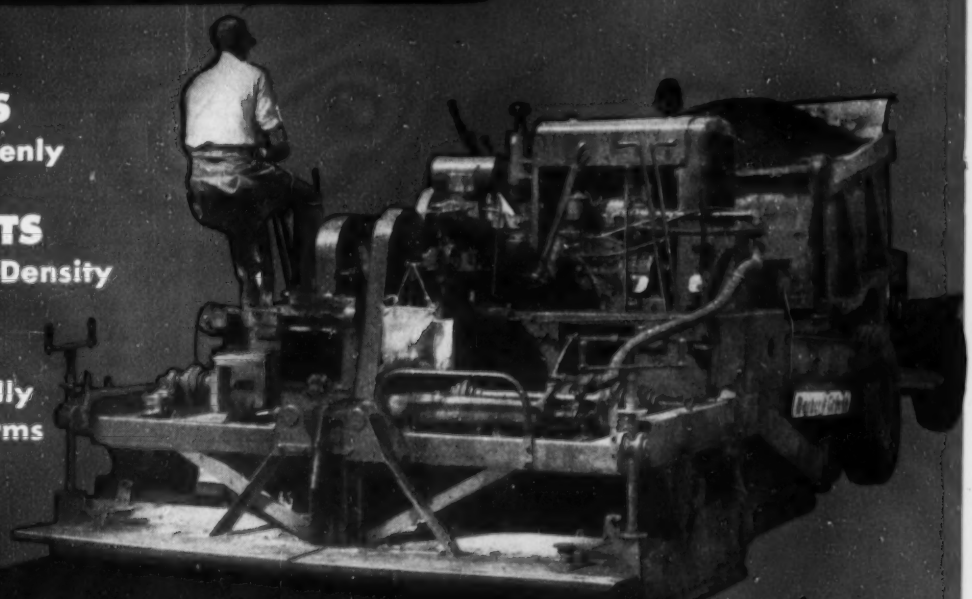
Material Evenly

COMPACTS
to Uniform Density

LEVELS
Automatically
Without Forms



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THE BARBER-GREENE TAMPING-LEVELING FINISHER

When the job calls for the highest quality bituminous surface, you'll do it best with the B-G Tamping-Leveling Finisher.

With this superbly designed machine, you are able to lay every type of mix — hot or cold — from clay stabilized gravel to high-type sheet asphalt. Whatever type mat you are laying, the B-G Finisher automatically measures the correct amount of compacted material — then simultaneously tamps, levels and strikes off to produce a ripple-free surface that is maintained under rolling and traffic. Because the material is compacted while it is being laid, you are assured of a surface of uniform density. And with the B-G leveling principle you compensate even for abrupt changes in the subgrade.

It will pay you to investigate this unequalled, universally preferred method of paving streets, highways, runways, parking lots, tennis courts and similar jobs. You will learn, for example, how the B-G Finisher saves truck time, minimizes rolling and reduces the size of crew. Investigate today!

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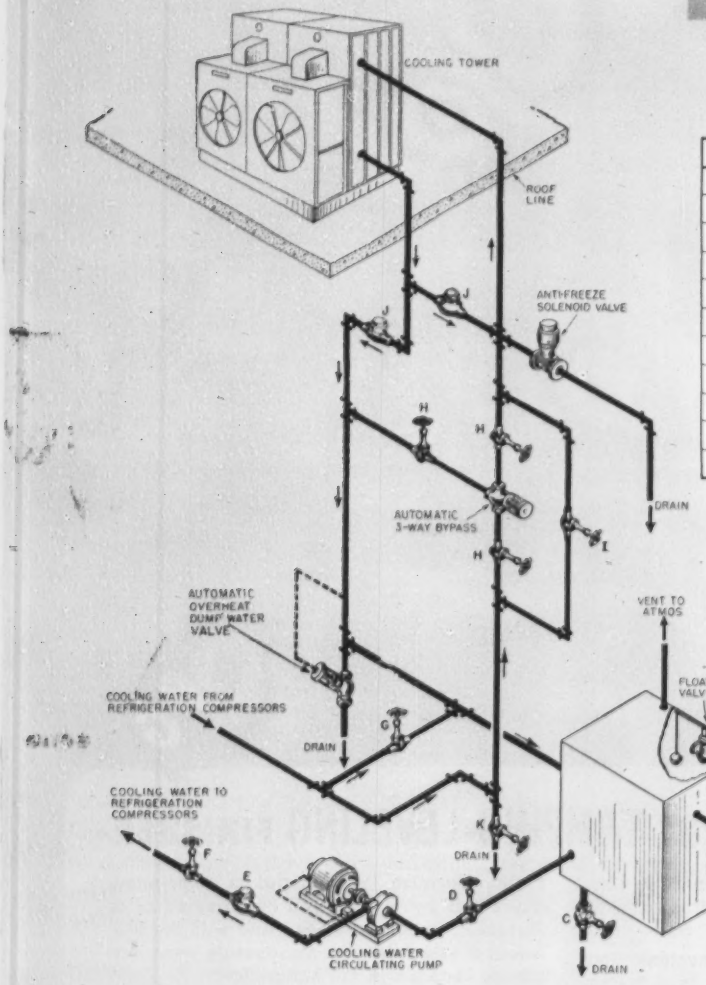
Aurora, Illinois, U. S. A.

JENKINS PRACTICAL PIPING LAYOUTS

71



VALVE RECOMMENDATIONS
For details of valves to suit varying conditions, see Jenkins Catalog.

Code	Quan.	JENKINS VALVE	SERVICE
A	2	Fig. 106-A Bronze Globe	City Water Control
B	1	Fig. 92 Bronze Swing Check	Prevent Backflow into City Water
C	1	Fig. 106-A Bronze Globe	Drain for Storage Tank
D	1	Fig. 1243 T.S. Brz. Solder Gate	Shutoff Cooling Water Circulating Pump
E	1	Fig. 1222 Swing Check Sldr.	Prevent Backflow to Pump
F	1	Fig. 1200 Bronze Solder Globe	Pump Discharge Control
G	1	Fig. 1200 Bronze Solder Globe	Cooling Tower Manual ByPass
H	3	Fig. 1243 T.S. Brz. Solder Gate	Auto. 3 Way ByPass Shutoff
I	1	Fig. 1200 Bronze Solder Globe	Manual ByPass for Auto. Valve
J	2	Fig. 1222 Swing Check Solder	Prevent Backflow to Tower
K	1	Fig. 1200 Bronze Solder Globe	Cooling Tower Drain

Diagram by Huxley Madeheim, Consulting Engineer
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How to plan PIPING CONNECTIONS *for a* NON-FREEZE COOLING TOWER

Where uninterrupted refrigeration is a round-the-clock operating requirement, a non-freeze cooling tower of the type illustrated here offers a dependable supply of cooling water at low cost. It also conforms with the water conservation regulations now enforced in many localities.

Since cooling tower and compressors must operate on the same schedule in any continuous refrigeration system—even when temperatures are below freezing—the water used in this system is stored in a vented or open tank located in a heated space, rather than in the conventional pan under the exposed tower.

When freezing weather occurs, an anti-freeze solenoid valve, actuated by a temperature-sensitive device, opens to drain all water from lines exposed to outside temperatures. The automatic 3-way solenoid valve permits the water to bypass the cooling tower under freezing conditions, or when it becomes too warm due to fan failure or overload in the storage tank. Under the latter conditions, the automatic overheat dump valve would also open. The subsequent drop of the water level in the storage tank causes the float valve to open and admit city water to make up the deficiency. Thus, in an emergency, city water would be used for cooling.

Consultation with accredited piping engineers and contractors is recommended when planning any major piping installation.

To simplify planning, to save time, to get all the advantages of Jenkins specialized valve engineering experience, select all the valves you need from the complete Jenkins line. It's your best assurance of *lowest cost in the long run.* Jenkins Bros., 100 Park Ave., New York 17.

Complete description and enlarged diagram of this layout free on request. Includes additional detailed information. Simply ask for Piping Layout No. 71.

JENKINS VALVES
LOOK FOR THE DIAMOND MARK
SINCE 1864 TRADE JENKINS MARK
Jenkins Bros

Vol. 152, No. 9

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THE CONSTRUCTION WEEK

BID CLEARING HOUSE—Something new—and worth thinking about—is the move of the Dayton Builders' Exchange to set itself up as a clearing house for owners for scheduling bid dates.

Motivation was provided by the Dayton chapter of the American Institute of Architects, which feared that contractors weren't getting proper chances to bid—and proper time to get all cost factors for better bids—as long as owners indiscriminately scheduled their lettings.

The builders' exchange will keep a public record of bid openings, advising owners that—to get the best bids—they should check with that record, schedule their bids accordingly.

TRUCK SAFETY SURVEY—Well aware of the large portion of all turnpike traffic that is credited to truckers, the Pennsylvania Motor Truck Assn., is planning what it calls "the largest safety survey ever attempted" on the Pennsylvania Turnpike.

Truckers hastened to add that their survey is an attempt to improve "the already fine record of safety" so far. The survey will concentrate on practices that have caused accidents in the past—and will commend good practice.

SALES TRAIL—Evidence of manufacturers' conviction that they've got to sell harder is at the core of the Producers' Council announcement that it is investing $100,000 in a traveling "caravan of building products" exhibit.

The caravan—containing some 45 specially built exhibits—started its journey this month at Pittsburgh. It will tour 33 cities before ending the "run." Sales targets: architects, engineers, contractors.

POWER PUSH DUE—You can read the tone of reports to be submitted to the President April 26 on Northwest power in the early moves now under way. The tone will be simple: Don't delay current programs.

That was clear enough in the recent meeting at Portland, Ore., of the governors of Oregon, Washington and Idaho—who had gathered at the Northwest Governors' Power Policy Committee meeting. The committee was created to provide the "local interest" half of the partnership plan laid down by the President.

Statements after the session made it clear that the three executives will oppose budget cuts for Columbia River projects that would slow or postpone planned hydro power delivery schedules. The governors think their states' economies would be hurt by slowdown.

Save 6 ways with this foundation pile

When heavy construction projects go on your drafting boards you'll want to look into these six time- and money-saving possibilities of Armco Welded Steel Foundation Piling.

1. A wide range of diameters (6 to 36 inches) and wall thicknesses ($\frac{9}{64}$- to $\frac{1}{2}$-inch) saves money and material because you use light or heavy wall as needed.

2. By ordering any specified lengths that can be handled and shipped, cut-off losses are reduced and field operations speeded.

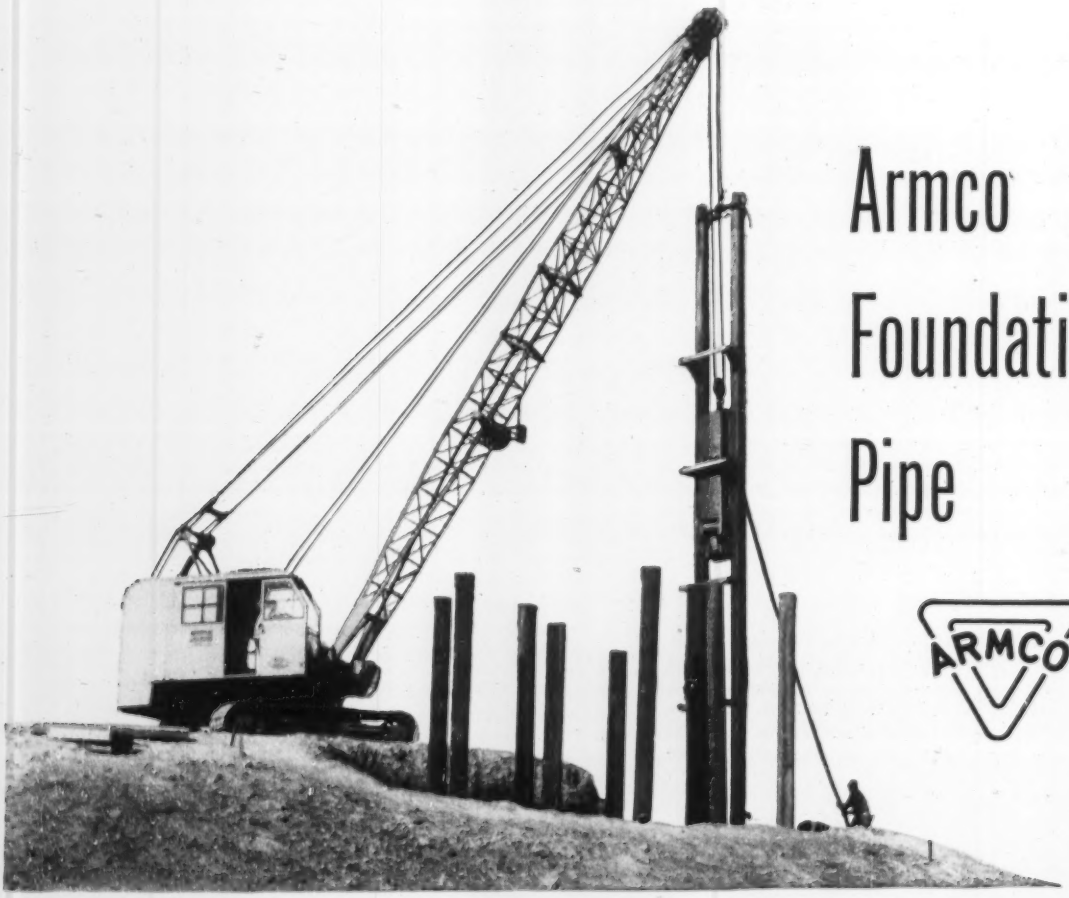
3. Armco Piles are exceptionally round and straight. This reduces the number of crooked or rejected piles and piles with specified load reduction. It also makes inspection easier after driving.

4. Uniform diameter end-to-end means salvable cut-offs, constant cross-section for good end-bearing, and high bending resistance throughout the length.

5. Steel end-closure plates, cone drive-points, and special cutting shoes can be mill-attached to eliminate inconvenience and cost of field welding.

6. The tough spiral weld imparts high collapse resistance and extra lateral stiffness to even the longest lengths. Armco Piles drive straight and require only a simple driving head.

Keep that next job on schedule by using strong, easy-to-handle Armco Foundation Piling. Also ask about the advantages of Cobi mandrel-driven or drop-in Armco HEL-COR Pile Shells. We will gladly quote on your specific needs. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 2084 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



Armco Foundation Pipe

ARMCO

WASHINGTON OBSERVER

Congress will begin to vote the money and authority for federal construction next week; all action is speeding up as congressmen knuckle down to try to get through by campaign time in July.

The St. Lawrence Seaway is on the timetable for debate in the House. The Senate already has approved.

The Interior Appropriations Bill is just about ready for full committee vote, and will come up by mid-month.

New housing legislation will get under way in the Senate and House Banking Committees any time now, will go to the two houses inside of a month.

Defense appropriations—for military installations and for civil defense functions—will come along more slowly.

•

Wunderlich Bill clearing up contractors' right of appeal to courts from rulings of government administrators has begun moving through Congress again. The Senate approved the bill last year. Last week a subcommittee of the House Judiciary Committee okayed the bill with only a slight amendment in wording. And the full committee was to vote on it this week. Chances for final enactment into law this session of Congress are looking much better.

On the other hand, the bid-shopping bill isn't going so well. The House Rules Committee last week voted against giving the legislation, already voted out of committee, a place on the schedule so that the House could take action. Its chances of approval this session do not look bright, even though the Senate committee has reported it favorably. Attempts to get it through the Senate last year by unanimous consent failed several times.

•

Hot dispute over allowable straight-time hours on federal contract construction has caused Army Engineers to postpone bid openings for a $5-million to $6-million paving job at the Little Rock, Ark., Air Force Base. Engineers have called in the Defense Department for a quick decision on whether it's legal for an open-shop contractor to work his men 56 hr a week at straight time (ENR Feb. 18, p. 275).

Since last fall workers of a two-firm joint venture have been putting in a seven-day week on grading work at the base, and there's nothing in the state labor laws covering the project that says they have to get time-and-a-half. So far the work does not involve interstate commerce.

Now, with the big paving job coming up, the Arkansas State Federation of Labor fears that open-shop contractors again will bid low—and start trouble again. So they've taken the fight to Washington. Should Defense duck the question—or decide it can't settle it by executive order—the issue would be up to Congress.

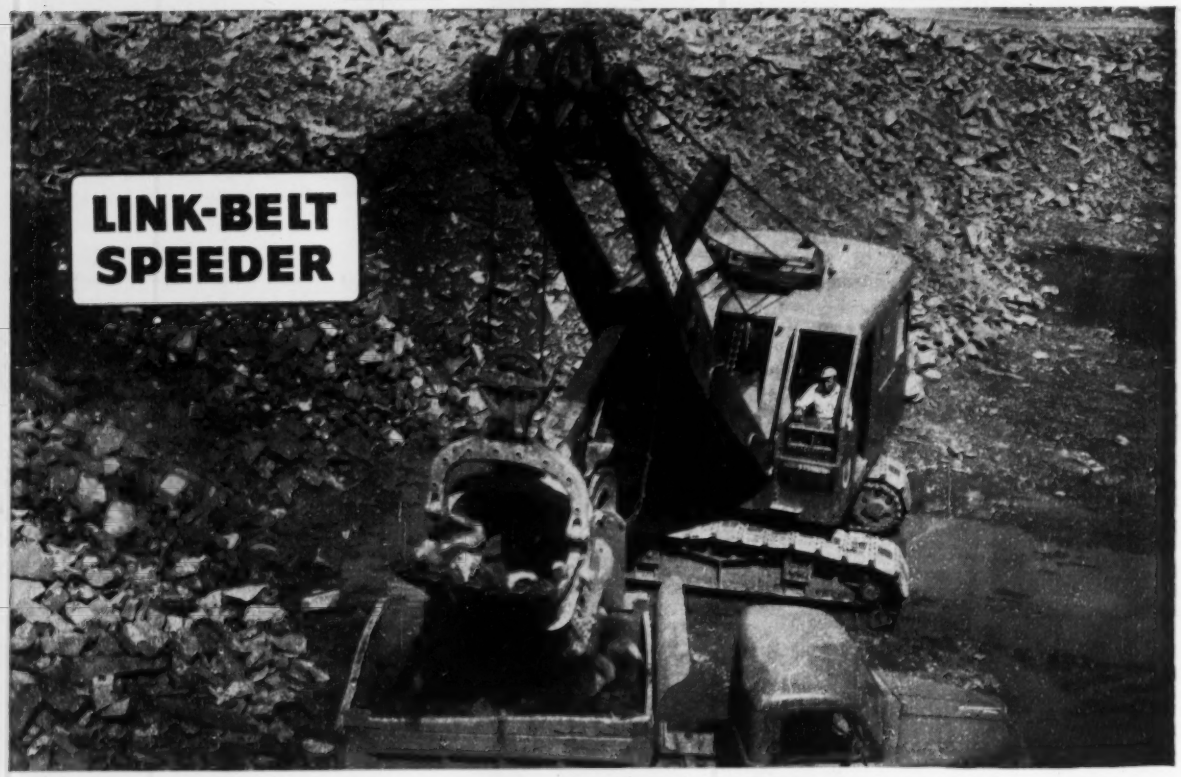
Approval of a mid-decade census of housing has been given by Commerce Dept.'s review committee on the Census Bureau. The mid-decade sample would be in addition to the regular decennial census made when the population check is taken. The report also urged that Commerce improve its construction statistics, now admittedly spotty, and strengthen its repair surveys, as well.

Secretary Weeks is expected to ask Congress for money to pay for the additional services, roundly estimated at $1.3 million.

•

A possible boost in Export-Import Bank loans for construction abroad may be one result of the Inter-American Conference at Caracas which opened this week. Ex-Im development loans were throttled down last spring mainly because of the budget-balancing of Secretary of the Treasury Humphrey. New loans for development in 1953 totaled only $5 million, down from the previous year's $261 million. This money goes for such things as dams, public building, highways, railroads, and the like. Secretary Dulles is expected to announce the upturn in Ex-Im lending. The question is: Can Humphrey manage to lift the lid only a fraction?

Consider net hp--Consider live wt!



The design of a K-360's crawlers is another important feature. Perfect guiding, self-cleaning, smooth traveling crawler tracks . . . improve operation and minimize wear.

Figure a job with a Speed-o-Matic controlled K-360 ...and your bid will be a tough one to beat!

LIKE all Link-Belt Speeders, a 1½-yd. K-360's 142 net hp gives you more digging power . . . more lifting power than any rig in its class. This quality-built rig has the stamina (see box) to handle the extra net hp week after week . . . month after month . . . without undue wear.

Consider these facts along with the 25% greater output you get with Speed-o-Matic controls, the *true power hydraulic system:* (1) Faster, easier, more accurate operation, (2) minimized operator fatigue or end-of-the-shift letdown, and (3) exceptionally low maintenance and service costs.

These are a few of the reasons why a K-360 helps you get more jobs without shaving profit. Get the complete story. Ask your distributor or write for catalog 2259.

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Cedar Rapids, Iowa

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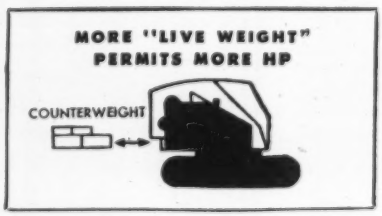


COMPARE 1½-yd. shovel-cranes with and without counterweight. That test spotlights the size, weight and heft built into the working parts and structure. You'll find the K-360 has greater "live weight."

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

LINK-BELT SPEEDER

$1.5 billion in toll road work initiated

Surveys to cover new 450-mi system in Ohio and second Indiana turnpike of 300 mi—Connecticut gets favorable report on projected 129-mi cross-state expressway

Engineering surveys rapidly were approaching a start last week on $1.2 billion worth of proposed toll-highway systems totaling over 800 mi in Ohio and Indiana. And in Connecticut, completed surveys indicate that toll income will be more than adequate to permit an early start on the proposed 192-mi, $346-million Greenwich-Killingly toll road.

• Ohio's proposed Turnpike No. 2 will be a 450-mi network to link principal centers of the state with Turnpike No. 1, the 241-mi toll highway now being built across the northern part of the state. Main stem of the proposed turnpike would extend 320 mi diagonally across the state from Conneaut in the northeast corner to Cincinnati in the southeast and would cost around $440 million. In addition, one spur about 130 mi long would leave the new cross-state highway at some point west of Columbus and extend north to Perrysburg on Turnpike No. 1 just south of Toledo. Another spur—as yet unauthorized—would extend eastward 85 mi from a point near Mansfield to a connection with Turnpike No. 1 near the Pennsylvania line. These two spurs would cost around $270 million.

• The Indiana Toll Road Commission has engaged J. E. Greiner Co., Baltimore, Md., to make preliminary surveys on a proposed 300-mi north-south toll road to connect the Chicago area with Louisville, Ky. To form part of a link in a projected Chicago-Miami, Fla., expressway, the $500-million toll road may have a spur built from a point south of Indianapolis to the Cincinnati, Ohio, area.

• Engineering reports made to the Connecticut State Highway Department increase the original $235-million rough estimate of the authorized Grennwich-Killingly toll highway to $346 million. Higher costs result primarily from the fact that six and eight lanes have been recommended in some areas where the highway department originally had called for six and four lanes. Potential income guarantees ability to finance the program.

• Ohio

• **Ask survey money**—Ohio's State Highway Directors, S. O. Linzell, has asked the State Control Board for enough money to complete surveys for the Turnpike No. 2 system. The control board has set aside $90,000 for preliminary studies for the main stem of Turnpike No. 2 and $45,000 for the spur northward to Toledo. Under the Ohio Turnpike Act, preliminary studies for proposed toll turnpikes are made by the state highway director. Actual construction if approved, will be done by the Ohio Turnpike Commission.

The Conneaut-Cincinnati route—main stem of Turnpike No. 2—would be connected to a projected toll highway across the northern tip of Pennsylvania and the western extension of the New York Thruway system (ENR Jan. 7, p. 30). The Pennsylvania Turnpike Commission assured Ohio last week that aerial surveys have been completed on its 45-mi link to join the New York Thruway and the Ohio Turnpike No. 2 with the Pennsylvania Turnpike. Traffic counts are being taken with the intent to build the link, and the western terminus has been set at a point on the Ohio line just south of Route 20.

• **Engineers to be engaged**—As a preliminary to asking for funds for full engineering studies of Turnpike No. 2, Mr. Linzell requested three engineering firms to submit proposals to him which would be used as the basis for negotiating contracts for the engineering work. These firms were asked to submit two proposals, one for a preliminary feasibility survey and one for completion of an engineering report that could be used as the basis for financing the work.

OHIO TURNPIKE NO. 2 will run diagonally across state with spur to Toledo.

The firms asked were the J. E. Greiner Co., Baltimore; Howard, Needles, Tammen & Bergendoff, Kansas City; and Chas. De Leuw of Chicago. The firm of Coverdale & Colpitts, New York, was asked to submit a proposal on a traffic and revenue study, based in part on data to be supplied by the state highway department.

For purpose of the proposed study, the main stem of the north-south turnpike (Cincinnati to Conneaut) was divided into four sections and each spur was considered a separate section.

Proposals of the engineering studies were submitted as follows:

	Preliminary	Complete
J. E. Greiner Co.	$60,000	$598,500
Howard, Needles, Tammen & Bergendoff ...	50,000	630,000
Chas. De Leuw.	200,000	650,000

For the four sections of the main stem, the proposal of the Needles' firm was lower than Greiner's, being $338,000 as against $380,000.

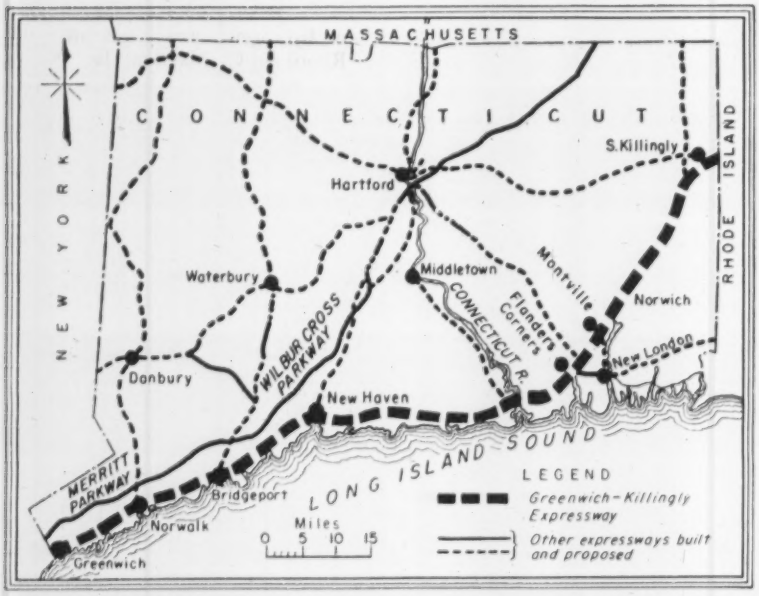
Coverdale & Colpitts offered to make the traffic study for $93,000.

• Indiana

• **First step: Chicago to Miami**—With the Indiana 156-mi east-west toll highway in the design stage (ENR Feb. 11, p. 24), preliminary surveys are being made on the estimated $500-million north-south route.

The proposed toll route will be the nucleus of discussion at a meeting scheduled for March 11 among governors of Indiana, Kentucky, Tennessee, Alabama, Georgia, and Florida to examine feasibility of a Chicago-Miami expressway.

Meanwhile the Lake Erie-Gulf of Mexico Turnpike Conference has been seeking a meeting in Cincinnati of the governors of the above states with the inclusion of Mississippi and Louisana, but with the exclusion of Indiana. Acting chairman of the conference, William J. Reardon, has pointed out that Indiana was not included in the list of states since its position in the Lake-Gulf route his group is promoting would be secondary. He added that the decision on inviting Indiana



GREENWICH-KILLINGLY toll expressway will cost $346 million for its 129 mi.

should be left to the governor of Ohio.

With completion of the preliminary survey of the north-south route scheduled for May, the construction involved in the program will be by far the largest in the history of the state. The northern terminus of the route will be on the Illinois line at Chicago. Then the route will run diagonally southward, passing west of Indianapolis, and ending near New Albany across the Ohio River from Louisville, Ky.

• Connecticut

• **Enlarged project**—Cost estimates made by Ammann & Whitney, consulting engineers, and traffic studies by Coverdale and Colpitts, both of New York specify more lanes and wider right-of-way than were originally called for on the authorized Greenwich-Killingly toll road in Connecticut. The new $346-million toll expressway will parallel U. S. Route 1 from the New York State line at Greenwich to Flanders Corners, near New London, where it will turn inland and run northeast to the Rhode Island line near South Killingly.

A six-lane highway is planned from Greenwich to New Haven, with eight lanes in the Brideport and Norwalk areas. Four lanes will be built from New Haven to Flanders Corners. From there to the Rhode Island line two lanes are to be built on a four-lane right-of-way except between Montville and Norwich, where four lanes will be put down initially to meet local traffic requirements.

The expressway will cross the Connecticut River on the Baldwin Bridge, a modern toll structure built on a relocation of U. S. Route 1 several years ago. East of the bridge for about 12 miles, it will take over the relocated highway, which has been graded for four lanes but has pavement on only two lanes.

• **Some free use**—Tolls are to be collected at eight barrier-type toll gates, as on the toll parkways in Connecticut, instead of at entrances or exits. This will permit some free local use, but its greatest advantage, according to State Highway Commissioner G. Albert Hill, will be the use of more interchange points, thus giving a maximum amount of local traffic relief.

Costs are broken down as follows: Right-of-way, $61 million; construction and equipment, $237 million; engineering, administration and legal, $19 million; contingencies, $29 million. Between Greenwich and New Haven, structure accounts for 55% of the cost in that area.

A bond issue of $398 million is proposed to cover debt service for two years, financing costs and interest during construction. Bonds will be of the expressway class, issued by the State Highway Department, as authorized by the legislature last year. They will be backed by income from tolls, concessions and gas taxes, not by the full faith of the state.

The highway department will maintain the expressway and will pay operating costs, including toll collection and administration.

A passenger-car toll of 15¢ is recommended at each station, amounting to $1.20 for the whole 129-mile trip. Truck rates range from 25¢ to 75¢ per station, depending on size of the vehicle.

Drought

Midwest water shortage poses problems for towns

A train of tank cars was hauling 300,000 gal of water daily from Kansas City's Turkey Creek Waterworks to Olathe, Kan., this week. Other Kansas and Missouri towns were supplied with water by truck as the severe drought of last summer extended through the winter over much of the central United States.

"Worst dust storm since the 30's" had swept a swath from Nebraska to Texas. Iowa and South Dakota wells had gone dry. Nebraska farmers were reported drilling irrigation wells as never before, in anticipation of a dry growing season. Southern Illinois was experiencing its worst drought in 70 years. And in Ohio, Governor Lausche was asked to call a special legislative session to consider local water problems.

Reports of 1953 rainfall totals from correspondents in 20 cities (ENR Jan. 28, p. 38) showed Dallas, Los Angeles, Cincinnati, Kansas City and St. Louis fared worst, with rainfall roughly 10 to 15 in. below normals. In each such instance of a big city with inadequate rainfall, surrounding smaller towns—with less capacity for storing water—have been the real sufferers.

Engineer Week observance stresses moral lead

"Engineering, confident present, challenging future," was the theme that weighed both nuclear power and moral forces, at a symposium February 23, in New York, to celebrate Engineer's Week and honor the School of Engineering of Columbia University at Columbia's bicentennial.

T. Carr Forrest, Jr. of Dallas, president, National Society of Professional Engineers set the keynote: The engineer and his relations with people, his advance from a technician to a professional, his responsibilities to exert even greater leadership, not only in his own profession, but also in participating in civic duties.

Dr. Lyman Bryson, guest professor of mechanical engineering at Columbia, told the group that engineers are in such a peculiarly powerful position in our society that they must also become better human beings and exert their power to restore harmony in our civilization.

"In this age, when morals have crumbled in many areas," said Dr. Bryson, "engineers have prestige and moral power that makes them most free from any taint of public suspicion."

ACI's 50th birthday marked by program on new problems

Future of shell and plate structures and prestressed concrete given precedence over history at Denver convention

Waldo G. Bowman

Editor, Engineering News-Record

True to its traditional character, the American Concrete Institute celebrated its 50th anniversary at Denver last week with a program of papers that dealt with the future and not with the past.

Even Prof. Raymond E. Davis, honorary member designate of the year, who was charged with the duty of reviewing the half century of service that the institute has rendered the art of concrete, presented the historical mileposts as guides to the future.

For those who want the history—and the very valuable perspective that it supplies—the ACI Journal for February carries five excellently researched articles. It is available from the institute offices in Detroit.

The ACI was founded in 1905, not to promote concrete per se, but to increase and interpret the working knowledge of concrete. Its 50th convention, as its first, reflected this philosophy, while concentrating on problems unheard of then or at most merely sensed in embryo. What these problems are may be seen from brief abstracts of some of the papers:

• **Ultimate load design for shells**—The structural behavior of cylindrical thin shell roofs at ultimate load involves longitudinal bending (1) as a beam of curved cross section and (2) as a slab. Factors to be observed in design are (1) the longitudinal beam bending, with resulting flexural stresses, diagonal tension, transverse moment and transverse thrust; (2) the longitudinal slab bending, with regard to continuity at end stiffeners or diaphragms; and (3) inelastic buckling, with regard to proportioning for full development of compressive strength under longitudinal thrust and adequate reinforcement against transverse thrust and moment.—George C. Ernst, R. R. Marlette and Glen V. Berg, University of Nebraska.

• **Skewed rigid frame bridge**—Concrete models of not just the component parts but of an entire skewed rigid frame bridge and slab can be tested with satisfactory results. A one-eighth reinforced concrete model checked analytical results as well as results obtained with a one-half scale model tested several years ago at the University of Illinois. Aggregate in the one-eighth scale model was one-eighth size. Quality of model concrete must be obtained from model test cylinders scaled down proportionately.—D. H. Pletta and Dan Frederick, Virginia Polytechnic Institute.

• **Concrete dam design**—Review of design practices on gravity and arch dams by a Bureau of Reclamation committee discloses that more rational (i.e. more exact) methods are possible with resultant economy. By the same token, if such useful refinements in design are to be increased, both laboratory investigations and measurements of behavior of structures in service must be enlarged as a part of a continuous program.—John J. Hammond, Bureau of Reclamation.

• **Flat slab model analysis**—Study of the behavior of a square bay flat slab by the photo reflective stress analysis technique (Presan) permits designing from a known moment distribution rather than from the average maximum moments. The latter method of design shows a 33% greater steel requirement. Consequently, on the basis of the more accurate analysis, substantial increase in the working stresses allowed by the ACI Code are justified.—Gerald Bowen and R. F. Shaffer, Presan Corp.

• **Cellular concretes**—Studies of concretes having a cellular structure and weighing from 10 to 100 lb per cu ft, as used extensively in Europe, and tested at the Bureau of Standards, show: compressive strengths increase with density, 250 to 1,000 psi for 30 lb per cu ft concrete to 800 to 3,000 psi for the 50-lb variety); that flexural strengths average from $\frac{1}{8}$ to $\frac{1}{4}$ of compressive strengths; and that thermal conductivity increases with density.

Cellular concretes, particularly those cured in high pressure steam, offer intriguing possibilities for light structural purposes. Moist-cured concretes are useful principally for insulation and fill. Probably the best method of cell manufacture is by "preformed foaming," that is by a foam generator that injects the foam as an "aggregate" into the mix. This process uses a hydrolyzed protein foaming agent. In other processes such agents as aluminum powder or hydrogen-peroxide gas are used.—Rudolph C. Valore, Jr., National Bureau of Standards.

• **Folded flat plate roof**—A type of roof not used frequently in this country is being constructed for a one-story building for the H. W. Moore Equipment Co., Denver construction equipment distributor.

One part of the 45,000-ft area is covered with a sawtooth shaped roof made up of "folded" concrete slabs or plates in the form of a Z; the remainder, by a hip roof in the form of a series of continuous inverted V's which have 25-ft cantilever overhangs. These V's are also "folded" plates.

Cranes and a mezzanine are supported directly from the V roof. The slab thickness throughout is 6 in., slightly thickened at the supports. Clear spans of the V roofs are 80 ft and of the Z roof 40 to 75 ft.—Milo S. Ketchum, consulting engineer, Denver.

• **Hyperbolic paraboloids**—In Mexico, many roofs and even some footings have been built with these doubly curved surfaces. They exhibit extraordinary buckling strength, and are free from bending stresses, except for small ones near supports. The shells are only about 1 in. thick, and seldom require stiffening ribs. Despite the curved surfaces, these structures permit formwork to be composed of only straight timbers.

Hyperbolic paraboloid roofs, with daring overhangs, long spans and ultra-thin sections, have proved satisfactory even when design is simplified by rather radical assumptions and where construction is not very carefully done.—Felix Condela, architect, Mexico City.

• **Forms for reinforcement**—Use of corrugated steel sheets for concrete forms is not new, but its additional use as the positive reinforcement in one-way floor and roof slabs is.

Now being manufactured by the Granite City Steel Co., St. Louis, under the name of CoFar, such combined form and reinforcement is being used in a number of new buildings, including the 20-story Denver Club building in Denver. The steel is galvanized and of high strength (80,000 psi ultimate). Across the relatively wide and deep corrugations, cold drawn wires are welded in the shop to serve as temperature reinforcement. The maximum wire spacing is 6 in., with closer spacing near the ends. These wires carry all of the shear from the concrete through the welds into the corrugated sheets. Depending on

reinforcing requirements, these sheets are used in 18 to 24-ga. thicknesses.

Such a composite construction, with the sheets exposed on the under side, has been given a 1½-hr fire rating. Advantages of this type of construction over conventional slabs are that it saves depth in the slab, is frequently less costly, and can be installed more quickly and easily, since temporary supports are required only with the longest spans of 10 to 14 ft.—BENGT F. FRIBERG, consulting engineer, St. Louis.

• **Commercial prestressing**—Successful mass production of precast, prestressed structural members of Prestressed Concrete of Colorado, Inc., has involved: close coordination of design, manufacture and erection; use of pretensioning; development of anchorage fittings that can be applied rapidly and released and reused; a large casting bed (300x10 ft); 300-ton tensioning equipment; use of a dry mix, ordinary Type I cement and high-pressure steam curing to secure high-early-strength concrete (6,000 psi in 24 hr); use of a paddle-type mixer to handle the dry mix; and close cooperation with local contractors to acquaint them with erection methods.—ORLEY O. PHILLIPS, consulting engineer, Denver.

• **Precast hangar**—The Royal Canadian Air Force required a demountable hangar of 130-ft span and 160-ft length.

It has been built of precast concrete, with no member weighing more than one ton. Each bent of the structure is assembled from six members, joints being cast steel hinges. There are two cantilever columns, i.e., inverted L-shaped members, and two arch-rib members hinged at the center and to the cantilever of the columns. These make up the 130-ft span, and on each side of this span there are two curved buttress members covering lean-to bays and hinged to the columns near the top.

The footings of these buttress members are concrete hinges, tied to the column footings by under-floor members. In effect, each bent consists of two 3-hinged frames supporting a 3-hinged arch. Bents are 10 ft apart, such close spacing being necessary to keep the weights of members under the 12 tons permitted.—OTTO SAFIR, consulting engineer, Vancouver, B. C.

• **Air entrainment**—The function of air in concrete is to protect the cement paste, and its effectiveness depends on the void spacing, which should be near 0.001 for good freezing and thawing resistance. The amount of air required for a given void spacing is directly proportional to the paste content, and is greater the smaller the specific surface of the air voids. With a given amount of air entraining agent, the amount of entrained bubbles is smaller, the greater the quantity of cement and other fine solids in the water.—T. C. POWERS, Portland Cement Association.

• **Federal views on concrete**—The heads of three federal agencies, whose use of concrete runs into millions of cubic yards annually, also offered timely comment on future problems and prospects.

Rear Adm. Joseph F. Jelley, recently Chief of the Navy's Bureau of Yards and Docks and now Director of Construction, Department of Defense, pointed out the great responsibility of the designer and contractor in selecting materials. First cost is a factor, but more frequently than not, it is less important than total cost, which includes maintenance and repair. Dependability is as great a factor in the selection of a proper material in his opinion. He urged the concrete industry to continue its efforts to increase the dependability of concrete and cited the activities of the Concrete Industry Board of New York City as bringing into close cooperation the talents of all segments concerned with assuring good concrete.

Commissioner W. A. Dexheimer of the Bureau of Reclamation pledged his organization, which has used 60,000,000 bbls of cement in its lifetime, to continue its studies and research on concrete.

Through this work concretes can now be made more resistant to sulfates, less liable to expansion from chemically reactive aggregates, and placed to proper dimensional tolerances and surface finish within reasonable costs. Research on new developments and on structures in service must receive increased attention in the future, he said, if progress is to be made toward the goal of better, less costly construction.

New ACI president

Installation of Charles H. Scholer (see cover) as new ACI president represents further recognition of the Kansas State College professor's contribution to important research projects, particularly in the field of highways.

In 1948, he received the Distinguished Service Award of the Highway Research Board of the National Research Council. The American Society for Testing Materials honored him in 1954 for more than 30 years' service on its committee on road and paving materials.

Scholer served as a consultant on cement and concrete for the TVA in 1938. During 1939-40 he was engaged as a consultant by the Portland Cement Assn., for its study of concrete paving failures in New York and Pennsylvania highways.

Before moving up to ACI presidency, Scholer served seven terms as a director and was vice-president in 1952 and 1953.

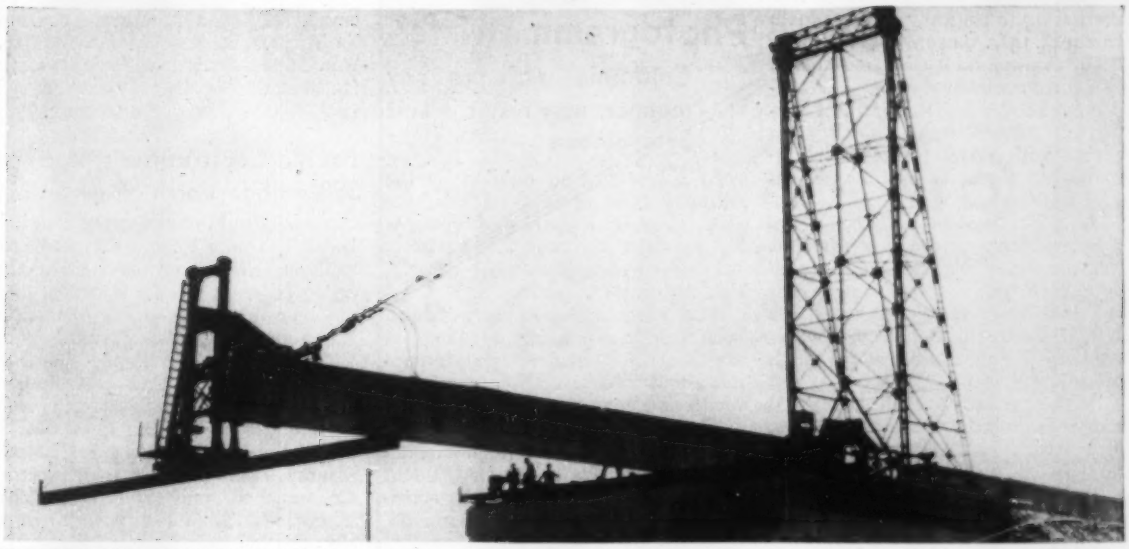
• **Army opinion**—Maj. Gen. S. D. Sturgis, Jr., Chief of Engineers, commented on the activities of his organization, as they affect concrete both at home and abroad. The Corps frequently is building so-called temporary barracks of concrete instead of lumber. Precast concrete panels are being used on large warehouses. Tilt-up construction is saving money. Concrete dams and concrete spillways of earth dams account for huge yardages of the material, which Corps of Engineers research has made less costly by reducing the cement content of mass concrete to 2½ bags per cu yd and by increasing the height of pours permitted.

But Gen. Sturgis, in referring to what the future holds for concrete, also brought out several significant items of Corps policy.

He recalled the Corps' recent recommendation (adopted by the Bureau of the Budget) to broaden the geographic distribution of water development projects by permitting 20 new starts in fiscal 1955. He sees this action as recognition of his belief that there should be a budgetary floor as well as a ceiling for civil works. Sturgis also stated his agreement with soil conservation measures.

• **Leaders, past and present**—It was natural at a golden anniversary convention that the names of great leaders of the past be recalled and that leaders of the present be honored. Among the former and now deceased, were Henry C. Turner, Leonard C. Wason, and P. H. Bates, and among those still living and present at the convention were eight former presidents—Franklin R. McMillan, R. B. Young, Raymond E. Davis, Douglas E. Parsons, Robert F. Blanks (also general chairman of the convention), Herbert J. Gilkey, Frank H. Jackson and Harry F. Thompson.

To this latter list was added the name of Henry L. Kennedy, manager, Cement Division, Dewey and Almy Chemical Co.; who retired as 1953 ACI president to be succeeded by Prof. Charles H. Scholer, head of the department of applied mechanics at Kansas State College. Prof. Frank Kerekes, assistant engineering dean at Iowa State College, was elected vice-president.



PRESTRESSED CONCRETE BEAM, erected by cantilever launching, was built of short precast units that were held together by means of tensioned cables. It was one of the members for a bridge over the Oued Djer in Algeria.

Prestressing applications expand abroad

French engineers are applying the principle of prestressing to a wide variety of notable structures. This was evident from descriptions of recent projects abroad given to ENR by Yves Guyon, assistant to Eugene Freyssinet, noted French pioneer in prestressed concrete, during a brief visit to the U. S.

Mr. Guyon is a consulting engineer for Societe Technique pour L'Utilisation de la Precontrainte (STUP), contractors Campenon-Bernard, of Paris, and the Freyssinet Company, of New York City. He also has written an outstanding treatise on prestressed concrete (recently published in English by John Wiley & Sons, Inc., New York City).

Among the noteworthy developments discussed by Mr. Guyon were construction in North Africa of a prestressed concrete airfield runway and a prestressed dam; several continuous-girder bridges built recently in Europe that indicated great progress in the application of prestressing to statically indeterminate structures; thin shell concrete roofs for industrial buildings that have been prestressed to advantage; and combining precasting and prestressing profitably in building construction.

ENR photo by Compton

YVES GUYON—"We are constantly trying to improve our precasting and erection methods."

• **Thin dam**—The dam, which will be built on the Djen-Djen River in Algeria, possibly starting this spring, will be a multi-arch structure, 260 ft high, with a length along the crest of 1,600 ft. Buttresses, spaced 116 ft apart, will be only 10 ft thick—made possible by the double curvature of the arches (torus shape)—though the dam was designed to have high resistance against bomb blasts.

The arches will have a radius in the horizontal plane of about 65 ft. Thickness at the crown will vary from 4½ ft at the top to only 8 ft at the bottom (200 ft below the top).

Prestressing will be applied with cables and with flat jacks, which can be inserted in narrow openings and expanded hydraulically. Reacting against rock at the downstream toe of the buttresses, the flat jacks will create thrusts totaling 300,000 tons to maintain the pressure line inside the middle third of the cross section under all loading conditions. Longitudinal and horizontal prestressing cables will counteract secondary stresses due to restraint at the bottom of the dam and to temperature changes.

• **Prestressed runway**—Flat jacks, Mr. Guyon says, provide a cheap way of prestressing without any tensioning steel when external abutments are available for the jacks to act against. These devices also will be used for longitudinal prestressing of a runway to be constructed this year at Maison Blanche, Algiers airport. Cables, however, will apply the transverse prestress.

The technique was worked out on an experimental 80x650-ft taxiway at Orly Airfield, near Paris, late last year. Some ways of avoiding shrinkage cracks in the concrete—principally by applying a temporary longitudinal prestress—resulted from experience gained with the first pair of 16x325-ft strips built at Orly.

Another significant application of flat jacks was for the longitudinal prestressing of a cylindrical aqueduct, about 24 ft in diameter, for the Bassin d'Essai de Carènes in Toulouse, France. Constructed of 150-ft-long precast units, the huge pipe was compressed by expanding flat jacks inserted in temporary gaps between the ends of the units, with terminal units acting as abutments. Circumferential prestress was applied with cables.

• **Progress in bridges**—In bridge construction, the greatest progress abroad is being made in the application of

prestressing to statically indeterminate structures. Mr. Guyon calls attention to the Amstel bridge in Amsterdam, with three continuous spans—112-184-112 ft. It was built entirely of precast, prestressed units, which were erected with floating cranes and assembled by a general prestress that insures continuity.

He also considers noteworthy the eight rigid-frame bridges recently built over the Nimy Blaton Canal in Belgium, each with a 186-ft central span and two 15-ft cantilevers, and the Battant Bridge in Besançon, France, with 215-ft span, the thrust for which was adjusted with flat jacks.

Of the more than 250 prestressed bridges built in France to date, about 80% have been precast. Two techniques were used: In some cases, each of the main beams was precast as a single unit, and after erection, all were tied together with transverse prestress. In other cases, each of the beams was fabricated by assembling short units and holding them together with longitudinal prestress. This technique was used for five rigid-frame bridges, with 235-ft span, over the Marne. (Cube strength of the concrete reached 11,000 psi.)

A more recent example is the Oued Djer bridge in Algeria. Short units were precast in a central plant with high vibration, transported to the site, then assembled into beams and erected by cantilever launching, to form spans of 100 to 120 ft.

These methods, Mr. Guyon said, are used only when there is sufficient repetition of members to permit economical mass production. Otherwise, members are precast on the site in standardized forms, which are shipped from job to job as needed.

• **Building trends**—Precasting and prestressing are also being teamed up for building construction. One example is a two-story, 490x88-ft warehouse in Rouen, with floors designed for a live load of 500 psf and 24x22-ft bays. The floor slab consists of 5-ft wide, lightly reinforced, precast channel-shape units. These were made continuous by prestressing with cables placed in grooves between the units. Cables also cooperate with the untensioned reinforcing steel to resist stresses that occur at midspan.

Applied to thin-shell roofs, prestressing opens new horizons. It enables creation of favorable boundary conditions at the edges, thus making possible a considerable reduction in bending moments. Barrel roofs have been built in England, France, Holland and Germany with spans up to 100 ft, and a "northlight" (monitor-type) span of 120 ft is now planned for a building in Holland.

Photogrammetrists

California move to pay mappers may result in suit by engineers

As a result of an opinion by the Attorney General of California, the State Controller has issued warrants for payment on mapping contracts awarded to photogrammetrists (ENR Feb. 18, p. 49).

The payments for survey work had been held up pending a ruling on whether non-engineer photogrammetrists should be licensed as are surveyors and engineers.

The attorney general ruled: "We conclude that these photogrammetric mapping contracts of the Department of Public Works do not call for activities within the scope of the engineers' or land surveyors' licensing laws."

The controller's office was hesitant about making payments in view of the likelihood that engineers and surveyors would bring suit, but the attorney general advised that the state can not decline to pay money which is justly due even if there is a possibility of its being sued.

The decision has released a backlog of photogrammetric mapping jobs accumulated in the Department of Public Works over the last five months. The State Division of Highways has issued a call for bids on some $250,000 to $300,000 worth of new work.

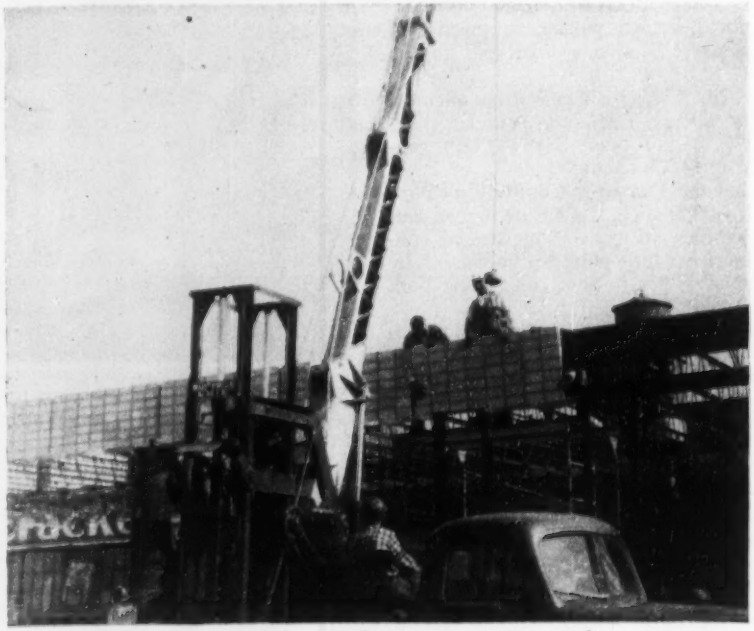
Pacific Coast utilities plan $98 million worth of jobs

The Federal Power Commission has issued a license to one Pacific Coast utility company and accepted application from another for a total of $98 million worth of proposed hydroelectric projects in Oregon and California.

California-Oregon Power Co. has obtained a 50-year license to build a $9-million, hydroelectric dam and powerhouse on the Big Bend No. 2 site of the Klamath River in Klamath County, Ore. Pacific Gas & Electric Co. has filed application for an $89-million McCloud-Pit River hydroelectric development 40 mi northeast of Redding, Calif.

Copco's license is for a diversion dam 52 ft high and 310 ft long. Powerhouse installations would include two 2,250-kw generators.

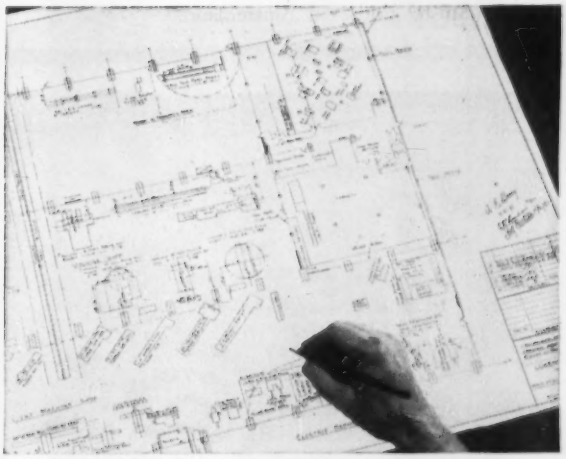
Pacific Gas & Electric Co.'s plan calls for two-stage construction of eight dams, five tunnels totaling 17½ mi in length, and two powerhouses to generate a total of 232,000 kw.



Precast brick panels speed construction job

Two brickmasons, a crane operator and laborer put up 5,000 sq ft of masonry wall in nine days by using precast brick panels. Ranging in size from 7½x3 ft to 8x5 ft and all 2¼ in. thick, the panels were installed on a straight wall 600 ft long and on an end wall 40 ft long. The panels are laid in stack bond to incorporate reinforcing rods placed horizontally and vertically on 9-in. centers. Installed cost of the panels on the job was $1.25 per sq ft. Architects for the job, West and Anderson, Genoa City, Wis., point out that the cost of conventional masonry for this same job would be $1.40 per sq ft. Panels were made by the Silbrico Corp., Chicago.

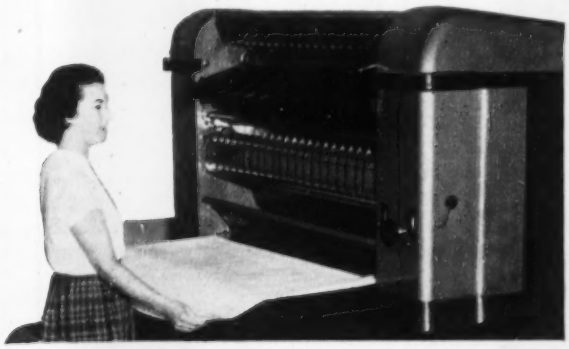
Instead of starting all over again



...he begins here

Here's how the Lukens Steel Company, Coatesville, Pa., uses Kodagraph Autopositive Paper to eliminate retracing in preparing flow diagrams and piping layouts.

THESE diagrams and layouts must also show the floor plans and fixed equipment installations of the departments involved. But instead of retracing this information from the basic plant layout drawings, Lukens Steel simply reproduces the drawings on Kodagraph Autopositive Paper—gets *positive, photographic* duplicate tracings directly. This gives the draftsman a tremendous head start . . . for he only has to add the new detail to the Autopositive print . . . *and another job is done instead of being barely begun.*



Low-cost Autopositive reproductions are made this easily at Lukens Steel:

Kodagraph Autopositive Paper is exposed with the drawings in a direct-process machine . . . and processed in standard photographic solutions. A fast, convenient room-light operation that produces positive photographic intermediates *without a negative step . . . without a darkroom.* These intermediates, in turn, assure highly legible prints.

Lukens Steel Company also uses Autopositive Paper *to produce print-making masters* from vendor blueprints; *to simplify filing,* by combining small vendor drawings on Autopositive intermediates in the standard Lukens drawing size; *to get low-cost protection* for original drawings which must be sent out of the plant.

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CONTRACTORS From upstate New York cities pay rapt attention as AGC lawyer explains intricacies of area bargaining.

Builders seek area solution for area problem

When a dozen construction men gathered in a private dining room of Statler Hall on the campus of Cornell University at Ithaca, N. Y. a week ago, their problem seemed simple, and the solution equally simple.

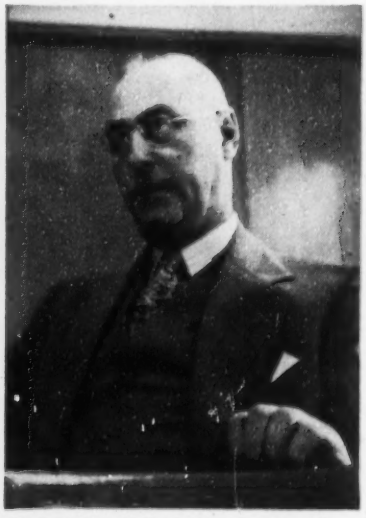
They were representatives of contractor groups of half a dozen cities in the Finger Lakes region of New York State, and they had driven to Ithaca to talk out their labor problems in the hope of putting up a solid front in upcoming negotiations with unions.

Informal though it was, regional grouping was a new wrinkle for these men. For years each had dealt with labor in his own city as a purely local problem, feeling the influence of wage patterns in other upstate New York cities, but reacting to no compulsion for joint bargaining.

• **Obstacles to cooperation**—This year—with the construction outlook un-

ITHACA—A. A. Ward feels pressure of outside builders' pay rates.

AUBURN—Stanley Vosburgh called meeting, urges solid front.



ROCHESTER—Adam Friederich tells of vacation stamp wrinkle.

certain—contractors in Elmira, Rochester, Geneva, Auburn, Syracuse and Ithaca began to think of their problem as an area one, demanding an area solution. By the end of their five-hour session in Ithaca—their second meeting of three—the contractor spokesmen had traded lots of information about labor demands and trends in their home towns, but a solid front seemed a long way off.

ENGINEERING NEWS RECORD, looking in on the conference, found the following obstacles to effective cooperation in area bargaining:

• There was no common opponent. Building unions in the upstate cities were not bargaining as an area unit, and the contractors showed little desire to take action which might pull construction labor together into a united front.

• The habit of city-by-city bargaining was not easily broken. Each representative was willing to talk freely about labor trends in his area, but that's where it ended. There was no serious indication of uniting, nor was there discussion of machinery to handle joint bargaining.

• The contractors were on the defensive. They believed, somehow, that this was the year to get tough with labor, the year to level off wages, but the conviction waned under the pressure of recitals of pay and fringe benefit demands being made almost daily in their home cities. Momentum of the last decade was threatening to push pay scales higher, and the contractors were too busy making woeful calculations of the dollars-and-cents cost of meeting the demands to consider seriously the possibility that the local union leaders were bluffing for the benefit of their memberships.

• **Under the surface**—The realities of the labor situation in the area represented at the meeting differed sharply. In some cities there was growing unemployment in the building labor force; in others construction was booming. But the fact was that there was little shortage of construction workers. Pay scales and actual wages paid differed in two or three of the cities, and the demands for higher pay did not appear consistent with the reality that construction workers—with job scarcity growing—were willing to work for less than contract rates.

The contractors—schooled in individual bargaining techniques for many years—were beginning to learn the complications of joint effort. Seasoned specialty contractors listened with respectful attention as a young lawyer from the Associated General Contractors explained the intricacies of area bargaining which has been a big source of AGC strength.

• **Vacation trend**—Citywide bargaining by building unions for vacations—already under way in Rochester—seemed to be in the offing in the upstate area. The Rochester building trades were pressing for a plan under which workers would be given eight cents worth of stamps for each hour worked. Pasted in a book, the stamps would be cashed at a bank just before a week's shutdown of the Rochester building industry.

Local unions were by no means the chief cause of concern of the contractors. Pressure from out-of-area contractors who offer high pay to attract workers to big private and government construction projects in the Finger Lakes region was felt by the smaller specialty contractors. And International unions stepping in to negotiate for locals on the larger jobs were an equally worrisome outside pressure.

Court fines electricians for antitrust violation

For attempting to control contract awards for electrical work, the business manager of an electrical workers local has been fined $1,000 and his union $3,000 by a Federal District Court in Nashville, Tenn.

Last month Local 175, International Brotherhood of Electrical Workers, and its business agent, Earl W. Burnette, were convicted of violating antitrust laws. Specifically, they were charged with refusing to supply labor or supplying only inferior labor to electrical contractors who were not members of the Chattanooga chapter of the National Electrical Contractors Assn. (For background story, see ENR Feb. 18, p. 277.)

Shakedown attempt convicts three AFL business agents

Three Missouri AFL officials have been convicted by a U. S. District Court in St. Louis of shaking down an Oklahoma City construction firm for $15,000 to keep peace on a pipeline project.

Two of those found guilty are business agents for St. Louis locals—Carl J. Bianchi (hoisting engineers) and William Poster (building laborers). The third, L. A. Thompson, is a former business agent of a teamsters local at Cape Girardeau, Mo. All face sentences of up to 20 years in prison and a $10,000 fine on each of two counts of violating the federal anti-racketeering law.

It was a recent crusade by the St. Louis press that revealed how shakedowns, restrictive labor practices and discrimination against out-of-town contractors have pushed the city's construction costs up to prohibitive levels (ENR Jan. 21, p. 28).

Alaskan wage agreement

Negotiators for eight AFL unions and the Alaska chapter of Associated General Contractors have settled on a wage increase of 12½ cents an hour for some 20,000 construction workers in Alaska. Affected are operating engineers, laborers, teamsters, cement masons, plasterers, bricklayers, ironworkers and lathers.

Roofing squabble starts a "better work" campaign

Seattle roofers and a roofing contractor have come up with a new type of labor dispute—a one-day work stoppage that the union terms "the beginning of a campaign to assure better work in the public interest."

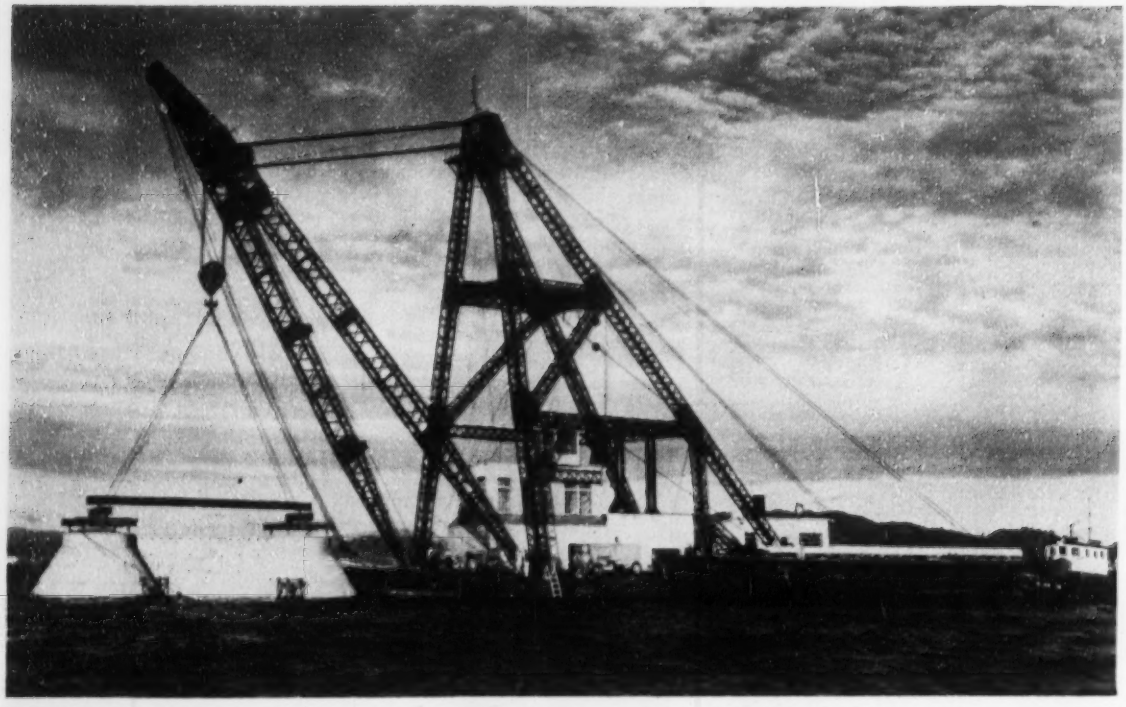
The conflict started at the Navy's Seattle Supply Depot and Receiving station. Bonded Builders of Tacoma has a $37,000 contract for roofing two of the buildings. Work was proceeding—until the union removed its roofers. It thought the job wasn't being done properly.

This is the way Clyde Fenn, business representative of the AFL roofers local, sees it. "The gravel-type roofs require cleaning, priming, an application of asphalt, a layer of insulation and, finally, the roofing material. But the roofs are not being primed. That means the asphalt won't stick properly. The first strong wind that comes along will blow the roofs away."

The roofers returned to work, says Fenn, because the contractor satisfied him that "quality work" would be done.

But Leslie L. Beckstead, owner of Bonded Builders, denies that the quality of work had anything to do with the work stoppage. He blames the whole trouble on a disgruntled former employee.

The Navy says the job was being done according to specifications.



DOUBLE CONE SHELL is set for Richmond-San Rafael Bridge pier by 150-ton floating derrick. These cones rest on top of cylindrical shells already in place and marked by steel towers shown protruding from the water.

Deep piers formed with huge precast units

Bridge marks first use of precast concrete for big bell-bottom pier bases and requires derrick lifts up to 105 tons

Deep-water piers for the Richmond-San Rafael Bridge are being built of precast concrete shells assembled under water. The reinforced-concrete shell units serve as outside forms for filling with tremie concrete to make a solid pier structure.

The four-mile vehicular bridge is being constructed across the north arm of San Francisco Bay under a $62-million financing that is officially called the Richmond-San Rafael Bridge Toll Bridge Revenue Bond issue. The structure will have two 36-ft decks, each with three traffic lanes. It crosses two 1,00-ft wide ship channels, spanning each with a steel cantilever structure with 537-ft anchor arms. The bridge also will have 36 truss spans, each 289 ft long, and 36 girder spans, each 100 ft long. This requires 79 piers, 62 of which are of the deep-water bell-bottom type. The remainder are cofferdam and land piers.

• **Departure from ordinary**—The concrete-shell method is a departure from recent practice in construction of bell-bottom piers. For example, at the Chesapeake Bay Bridge, non-reusable steel forms held the underwater concrete. And, as a matter of fact, at Richmond-San Rafael there are nine of the larger piers where such steel forms are used for part of the structures. But 53 of the deep-water piers are formed almost entirely of concrete shells.

Credit for development of the concrete shell procedure is due the contractors on the substructure work—a joint venture of Ben C. Gerwick, Inc., and Peter Kiewit Sons Co., holders of a $14-million contract. Experience gained by Gerwick, in using similar methods on construction of piers for a San Francisco Bay crossing of a Pacific Gas & Electric Co. transmission line (ENR March 5, 1953, p 30) convinced both contractors and state officials of the feasibility of the concrete shell method, and that smaller job gave valuable experience to contractor personnel who are now working on the bridge job.

Plans, drawn by the Division of S. F. Bay Toll Crossings of the California Department of Public Works, called for bell-bottom piers. But the plans did not give detailed instruction on construction methods. Thus, the contractor was able to develop new methods for bridge pier construction, subject, of course, to approval and suggestion by state engineers. Other recent bridge jobs not only called for a definite type of bell-bottom pier but gave detailed instructions on methods of construction.

The bell-bottom pier with concrete placed under water was adopted by the state only after several different caisson and cofferdam designs were considered. State engineers estimate the bell-bottom design saved about $1 million over the next cheapest.

• **Piles driven first**—Profile of the bay bottom varies widely in the four-mile length of the bridge. At some points, rock is very near the surface, but, generally, the mudline is at a 40 to 50-ft depth, and rock (or in some instances a firm sedimentary stratum) is 140 to 150 ft below that. This means that all the deep-water piers must be pile-supported. And the plans require that the piles be driven through a template to assure proper positioning.

The contractor elected to use a concrete template, rather than the more common timber. The concrete is heavily reinforced, is 12-in. thick, and has H-slots in it for pile positioning. It serves a triple purpose, being also used as a bottom form for the tremie concrete that forms the bulk of the pier, and as a seat for the lower shell sections.

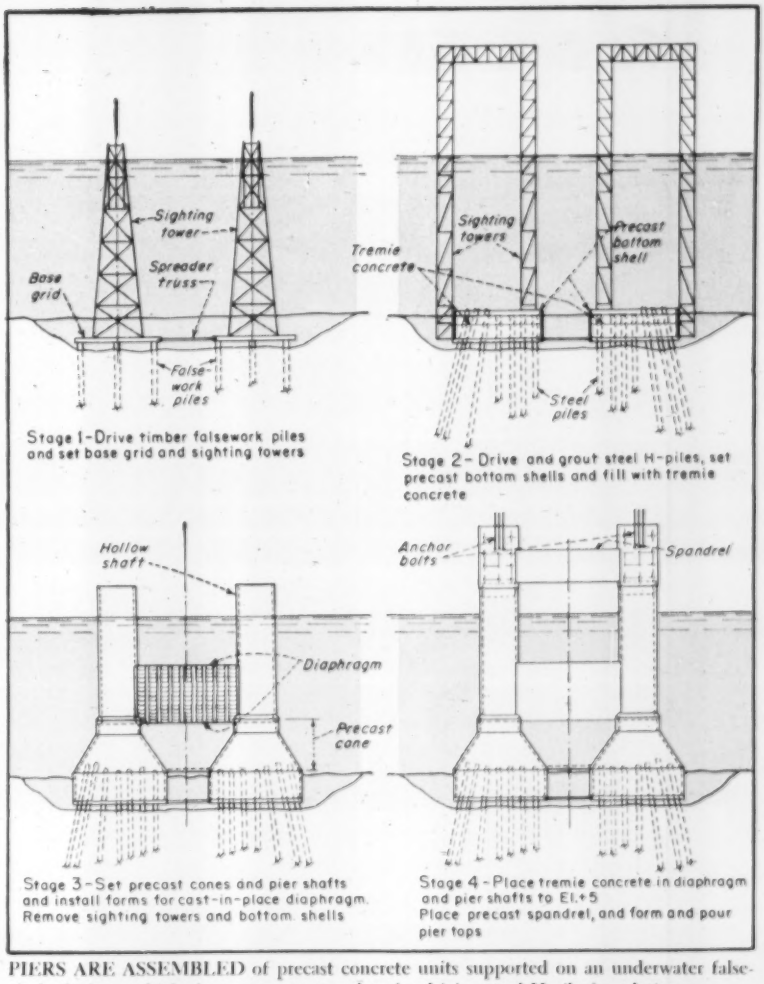
First construction step is to excavate a 12-ft depth of mud, then drive timber falsework piles to support the concrete grids. The piles are cut off to proper elevation by an underwater saw operating from telescopic pile driver leads.

The grids are set in pairs, connected by a steel spreader truss. Mounted on each grid is a steel pipe cage with a centering mast for the precise alignment of the units. These towers are removed before pile driving begins.

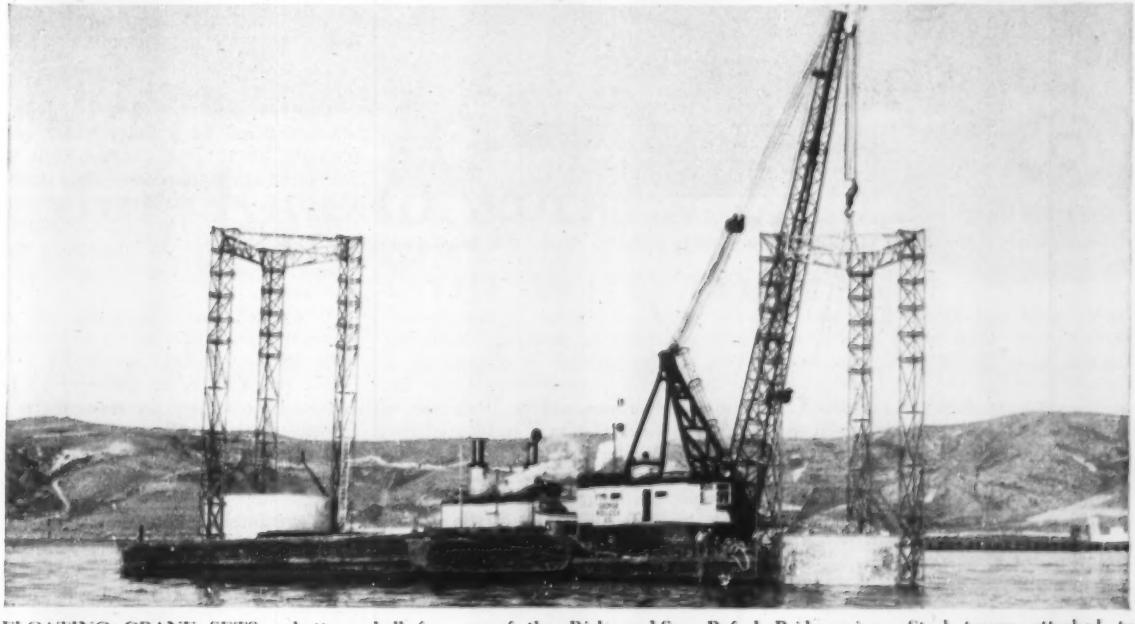
Since the 62 deep-water piers vary greatly in size because of difference in weight that they must support, the number of piles for each bell differs considerably. They range from 14 to 34 ft in diameter and from 15 to 77 piles per bell (14-in., 89-lb H-sections calculated to support a 60-ton normal load in hard strata or 100 tons under earthquake load). Both plumb and batter piles are used. The batter is 2 in. 12 for interior piles and 3 in 12 on the outer circumference. Number of plumb piles varies from 40 to 70% of the total under each pier leg.

The vertical piles are driven first to anchor the grids in place and also to establish the length of other piles. Then tremie grout is introduced into the space between the pile and the H-slots in the grid. The purpose is to provide bond between pile and grid as well as to retain the tremie concrete. This gives support to the structure above in addition to that provided by the timber falsework piles. And it is a safety factor in case

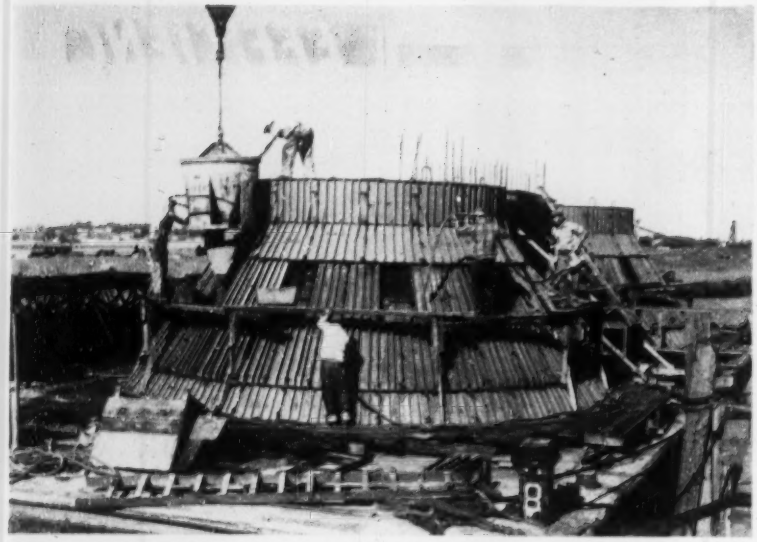
(*Continued on page 32*)


Sighting tower
Spreader truss
Base grid
False-work piles
Stage 1-Drive timber falsework piles and set base grid and sighting towers
Sighting towers
Tremie concrete
Precast bottom shell
Steel piles
Stage 2-Drive and grout steel H-piles, set precast bottom shells and fill with tremie concrete
Hollow shaft
Diaphragm
Precast cone
Stage 3-Set precast cones and pier shafts and install forms for cast-in-place diaphragm. Remove sighting towers and bottom shells
Anchor bolts
Spandrel
Stage 4-Place tremie concrete in diaphragm and pier shafts to El.+5
Place precast spandrel, and form and pour pier tops

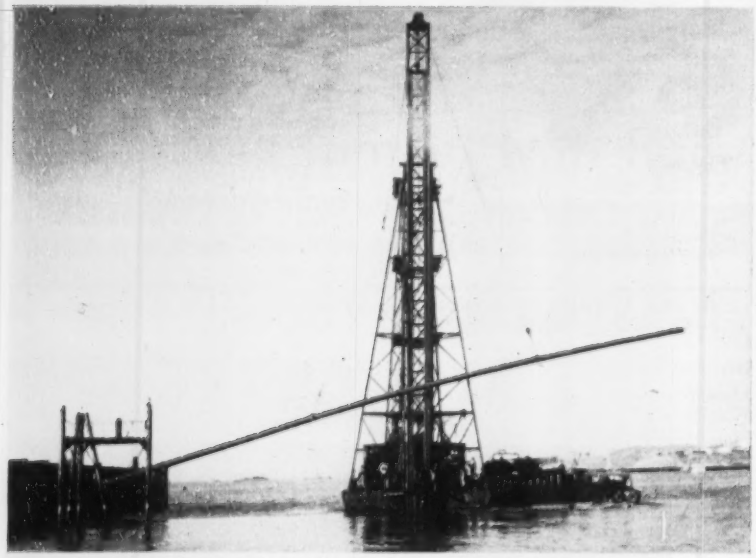
PIERS ARE ASSEMBLED of precast concrete units supported on an underwater falsework platform which also serves as a template for driving steel H-pile foundations.



FLOATING CRANE SETS a bottom shell for one of the Richmond-San Rafael Bridge piers. Steel towers attached to the precast concrete shell will guide additional pier elements into position. Mate to shell being placed waits on barge.



POURING PRECAST UNITS is accomplished at yard some 20 miles from bridge site. Using specially-designed forms, cone and diaphragm shells are cast on barges to eliminate one lift of the units weighing in excess of 100 tons.



FLOATING DRIVER swings long H-pile into its 120-ft high leads. Piles are threaded through H-slots concrete grid 60 ft under water using telescopic leads. Pile lengths are as great as 200 ft.

batter piles are driven through the timber piles. Tests made by the contractor have shown that the bond formed between the grout, piles and grid is stronger than the grid itself.

Next, the batter piles are driven and grouted for additional support and an added safety factor.

Piles are delivered to the work on a surplus LSM converted into a barge. The two drivers on the job have 120-ft stationary leads with 120-ft telescopic leads. They are said to be the largest floating drivers on the West Coast.

Piles are picked up from the LSM barge and, by means of anchor lines, the pile-driving barge is maneuvered into approximate position. Orientation is determined by means of a gyro-compass and gyro-repeater installation on each driver. The pile is lowered to within a few feet of the grid and a diver sent down to "talk" the barge into exact position. Once the pile has been introduced into the slot the diver surfaces and the pile is driven. From 15 to 40 minutes is required to drive each pile.

• **Hollow concrete shells**—Next in the pier construction sequence are the hollow concrete bottom shells. The 9 ft high shells are positioned by guide plates cast in the grids; however, a diver checks exact position as the units are lowered.

Each bottom shell is handled by 3 tubular steel towers extending above water. These towers are also used to position and brace following concrete elements. The steel towers also support tremie pipes for concrete placing.

After the bottom shells are in position, a 5-ft thick lift of tremie concrete is placed. This bonds the structure to the H-piles for positive support of the rest of the pier as it is built.

Heaviest lift comes next. It comprises a pair of twin truncated cones connected by a concrete diaphragm shell and weighs up to 105 tons. The cone units fit over reinforcing steel extending up from the previously set bottom shells so that, when the tremie concrete core of the pier is placed, the reinforcing provides positive bond between bottom section and cone.

(Fifty-three of the deep water piers are "2-belled" piers and nine are "4-belled" piers. From the cone section on up, the 4-belled piers are formed with steel shells. These shells are light enough to be handled by the contractors' derrick barge whereas concrete 4-belled shells would be prohibitively heavy. These 4-belled piers are required for the main towers on the cantilever portion of the bridge and for anchor piers.)

Next comes concrete shafts weighing up to 101 tons each that take the pier structure above water line. These shafts are positioned by the tabular towers attached to the bottom shell. A turnbuckle arrangement holds them in place until tremie concrete can be poured.

The two shafts in each 2-bell pier are connected by a below-water diaphragm, which is a continuation of the diaphragm between the cone units. Forms for the diaphragm between shafts are metal. They are completely assembled in the dry including the reinforcing steel. Later removal permits reuse.

When all these elements are in place, the entire pier assembly is filled with tremie concrete up to El +5. These pours range in quantity up to 1000 cu yd. They are serviced by a floating concrete plant. The plant is supplied by aggregate barges and a converted LSM carrying bulk cement.

Next step is to place precast concrete spandrel beams on top of and between the shaft units. Then the pier top up to El +13 is formed and anchor bolts set. When this final concrete is poured, the deep-water piers are finished except for form

(*Continued on page 35*)

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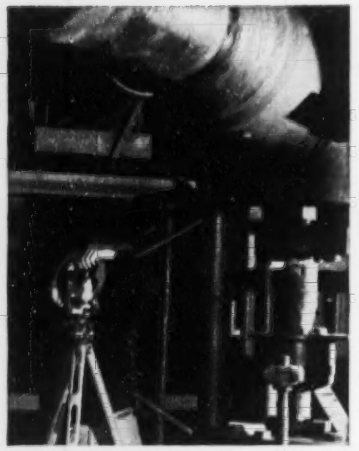
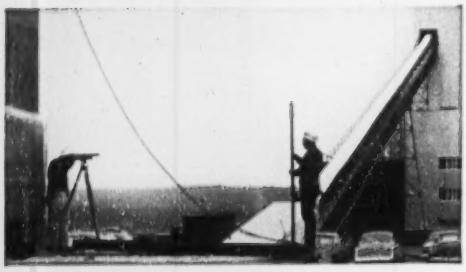
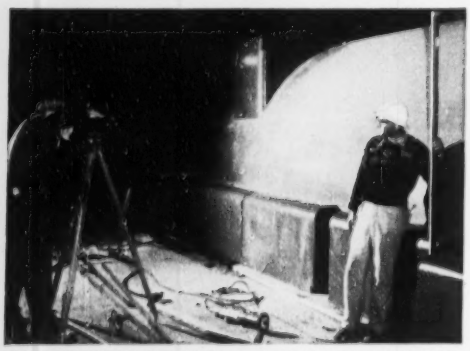


CHECKING ALIGNMENT of the turbine throttle valve with Berger 6" Transit; grade set with Berger Level. Tolerances 1/32" in any direction.



ESTABLISHING GRADES for setting reclaim hopper with Berger Level.



CHECKING TURBINE GENERATOR to elevation within ±1/32" with a Berger Level.

From project base line
to complete power plant installation...

Berger Instruments point the way for Stone & Webster engineers

"In laying out a power plant like this for The Hartford Electric Light Company, 1/32" is a critical dimension – whether you're establishing the initial project base line or aligning the turbine throttle valve – because all buildings and equipment must be accurately integrated into one operating unit," say the field engineers at Stone & Webster Engineering Corporation.

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Center lines for all equipment — piping, generators, boiler feed pumps, pulverizers, condensers, etc. — must be accurately related to one set of base lines.

Rails for 120-ton overhead bridge crane 97'6" apart must be truly parallel within 1/16" and set accurately at required distance.

Berger Instruments were on the job here, as they are on so many other Stone & Webster projects. For when the "specs" call for really close-tolerance construction, leading engineers and construction men buy Berger . . . Take one into the field and see why. *Count on quick delivery—thanks to enlarged capacity.*

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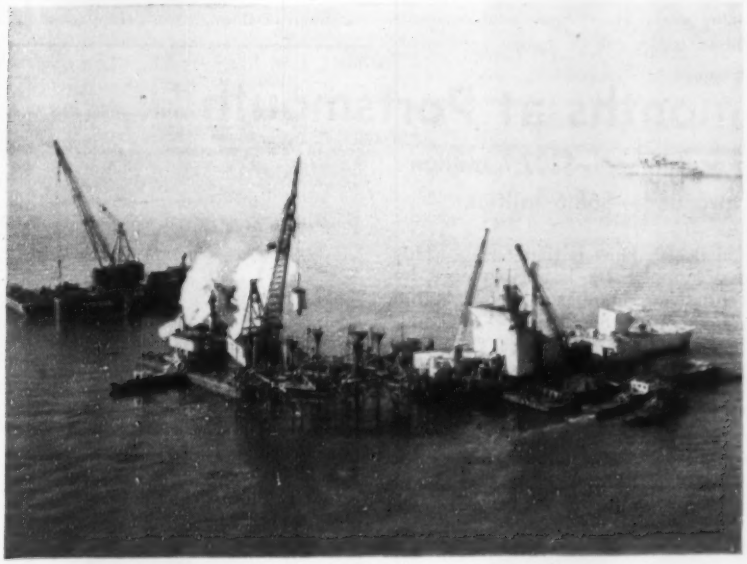
HOLLOW SHAFT goes into the water. Note opening in shaft for diaphragm connecting it with adjacent shaft. Concrete is coated with protective compound in area subject to alternate wetting and drying.



CONCRETE from a floating plant is placed through long tremie pipes. Plant is serviced by aggregate barge placed on one side and cement barge feeding from the other side.

stripping and removal of the steel towers.

• **Rigorous time schedule**—The substructure contractor is required to deliver piers for steel erection in accordance with a tight time schedule. Each of the 62 deep-water piers is scheduled for an individual completion date ranging from early in 1954 to mid-1955. A liquidated damage penalty equaling the bond interest per day will be assessed when any one of the piers is late. So far the substructure contractor is on schedule. Completion of the bridge, including steel superstructure and approaches under separate contracts, is expected by October, 1956.

The project was designed and construction is being supervised by the Division of S.F. Bay Toll Crossings, California State Department of Public Works. Norman C. Raab is projects engineer, Ben Balala resident engineer.

The Gerwick-Kiewit joint venture is under the general direction of Ben C. Gerwick, Jr., vice-president of Ben C. Gerwick, Inc. Don Weaver is project manager, Wm. Talbot is project engineer and John Ford is project superintendent.

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ENR staff photos

CLOSE TOLERANCE construction at the Atomic Energy Commission's $1.2-billion gaseous diffusion plant in Ohio starts with grading work. Heavy equipment compacts building areas to a high degree to prevent future settlement of process equipment.

Setting the tempo of construction

Shortly after the AEC's selection of the site for its Portsmouth Area gaseous diffusion plant, the construction tempo was set by Gordon Dean, then chairman of the AEC, in a speech delivered at the 75th Annual Meeting of the American Bar Association, in San Francisco. Dean had this to say about the AEC's expansion program:

"It is the purpose of this program to help us reach our goal of maximum atomic strength and to reach it as soon as possible in this effort. Time is clearly of the essence, and if we lose time in pushing the program forward we will be defeating the whole purpose for which it exists.

"This means that in the years immediately ahead of us we must lose no time in designing and building these facilities. We must lose no time through errors in judgment or by letting other objectives of our program stand in the way. We must not lose time because of material shortages or difficulties in recruitment or through work stoppages."

AEC reviews 16 months at Portsmouth

- **Materials and equipment procurement—$307.7 million**
- **Construction subcontracts awarded—$68.6 million**

When the AEC announced the selection, Aug. 12, 1952, of the site for its $1.2-billion uranium-235 plant midway between Portsmouth and Chillicothe, Ohio, the very size of the undertaking staggered the imagination of the construction industry. But according to the latest reports the complicated and gigantic venture is reasonably well on schedule.

For reasons of security, progress construction photos are not available to show what has been accomplished in the 16 months since Peter Kiewit Sons' Co., Omaha, was named the principal construction contractor. At the same time nine prominent engineer-architect firms were named to engineer and design the work (ENR Aug. 21, 1952, p. 21 and Sept. 11, p. 71).

One offshoot of the project is the construction of a 46-mile, four-lane highway from Chillicothe to Portsmouth to serve the plant (ENR Sept. 3, 1953 p. 26). This $26-million road is scheduled for completion late this year or early in 1955. Another aftermath of the AEC's decision to locate the plant in Pike County, Ohio, was its economic and social impact that is being felt on that area (ENR Nov. 19, 1953, p. 40).

But what of the plant's construction itself? How is that faring? This was summed up last November by Kenneth A. Dunbar in a talk before the Portsmouth Chamber of Commerce. Dunbar is the AEC's manager of the Portsmouth Area. He was formerly in charge of construction of the AEC's atomic plant at Paducah, Ky. (ENR July 19, 1951, p. 28).

"We are pushing the job along as rapidly as possible," said Dunbar, "and we are not unhappy with the progress made during the past year. Our immediate objective is to get process and auxiliary facilities vital to our target dates for start-up and production under roof before we run into bad weather."

• **Temporary construction** — In his brief run-down on the progress to date, Dunbar pointed out that construction facilities totaling nearly 1,000,000 sq ft are nearly completed. These include structures designed to serve during construction only, such as: warehouses for protection and control of certain building materials and equipment; shops for fabrication and preparation of materials and equipment; office space for management, engineering and clerical personnel; cafeterias, etc.

AREA MANAGER, Kenneth A. Dunbar: ". . . we are pushing the job, and construction progress is satisfactory . . ."

• **Grading and site work**—"We are nearing completion of the grading and site work," said Dunbar, "which includes 7,500,000 cu yd of excavation and back-fill, and 1,500,000 cu yd of crushed rock fill."

Dunbar emphasized that maintaining a smooth, free flow of men and materials to all parts of the project is essential on a job of this magnitude. To facilitate this there have been completed 20 miles of surfaced roads

and 25 miles of single track railroad within the plant site. Also, to date, about 75,000 lin ft of water and sewer lines have been laid, he said.

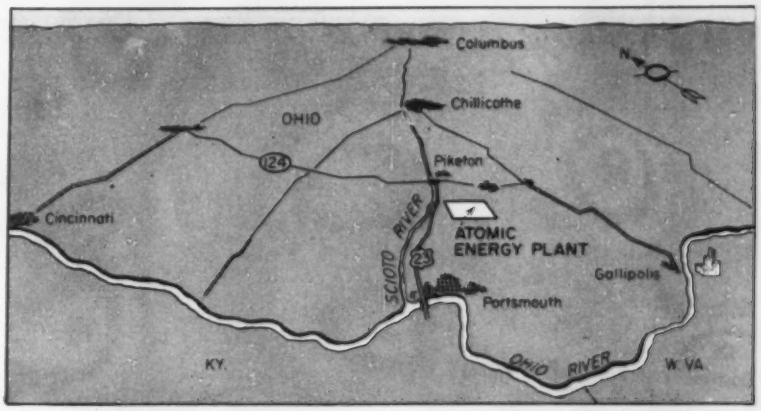
• **Permanent structures**—Digging further into his records, Dunbar declared that work has been pushed at a rapid rate on structural steel erection for the main process buildings and the auxiliary buildings which form the actual production complex.

Portions of these buildings already are partly sided and under roof. Enclosing them before bad weather arrived permitted uninterrupted installation of production lines.

In terms of floor area, these permanent buildings total 8,800,000 sq ft. About 141,000 cu yd of concrete and 26,000 tons of structural steel have gone into their construction to date, said Dunbar. Equipment in the form of motors, compressors, converters and process pipe has already begun to arrive at the site.

• **Subcontract**—Perhaps a better yardstick of the magnitude of the project and the diversity of its construction requirements are the subcontracts awarded. These, explained Dunbar, which are awarded on the basis of

(*Continued on page 38*)



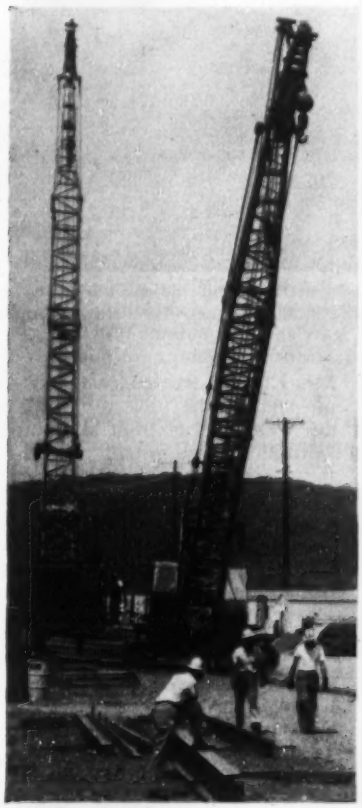
SITE SELECTION was governed by the availability of large and dependable water supply and electricity, an adequate potential labor supply and suitable transportation facilities. A 46-mile, $26-million four-lane divided highway is being built from Chillicothe to Portsmouth to serve the plant.

Facts and figures

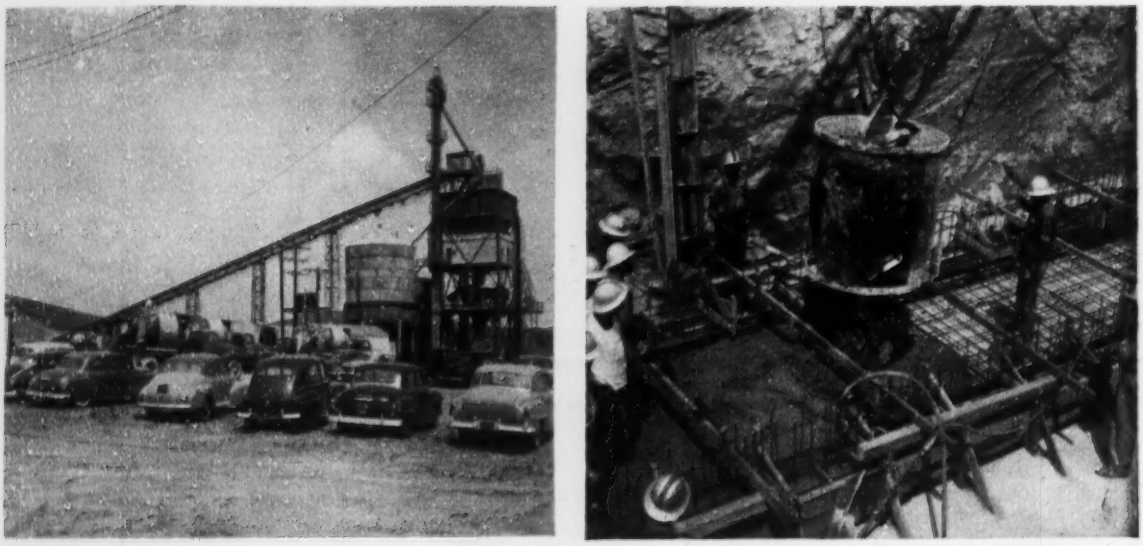
Area of site, 3,700-acres . . . electric power to be furnished by the Ohio Electric Power Corp. (15 power companies) . . . power required during plant construction and early operation 465,000 kw. . . . power required for completed plant operation, 1,800,000 kw. . . . annual power consumption, 15-billion kwh, costing $60 million . . . construction timetable, about 4 years for completion . . . peak total employment during construction (including operations), 30,000 . . . average employment during construction, 17,000 . . . plant-operating personnel, 4,000 . . . operating contractor, Goodyear Atomic Corp.—subsidiary of the Goodyear Tire & Rubber Co.

Magnitude of facilities: 14,000 engineer drawings, enough to cover 2½ acres . . . 87,000 installed instruments . . . water required for plant operation and sanitary use, 40 mgd . . . 425,000 cu yd of concrete . . . 25,000 tons of reinforcing steel . . . 110,000 tons of structural steel . . . 4,750 tons of railroad rails . . . 595 miles of pipe (all sizes) . . . 1,065 miles of copper tubing . . . 4,600 miles of electrical wiring . . . 590,000 ft of welding . . . and 2,500,000 sacks of cement.

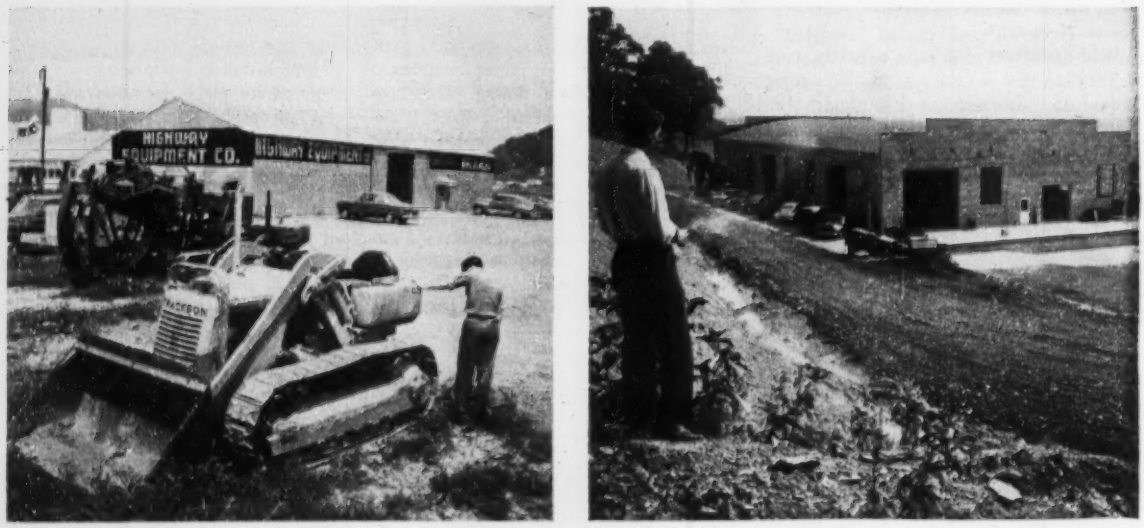
It will take 145,000,000 man-hours to complete the project—enough to keep one man on a 40-hr week busy for 69,712 years.



CONSTRUCTION EQUIPMENT, selected to perform specific work includes long-boom cranes for steel erection (at left) and versatile truck-mounted, telescopic excavator (at right) for digging shallow footings.



EARLY STAGE concreting included batching plant (at left), delivery to the site in transit mix trucks, and placement in the forms (at right) by crane and bottom-dump concrete buckets.



TWO EQUIPMENT DISTRIBUTORS have built permanent sales and service headquarters just off the main highway, near the construction site. One is located in a farmyard (at left); the other on the side of a hill (at right). Each sees a $1-million sales potential in equipment during construction of the atomic energy plant.

competitive bids—generally through public advertising—are let by the Peter Kiewit Sons' Co. with the approval of the AEC. They are either fixed price or unit price subcontracts, and fall into two categories: Materials supply subcontracts and construction subcontracts.

Dunbar's records revealed that by last Oct. 31, Kiewit had awarded 214 materials subcontracts totaling $68.1 million.

In addition, Kiewit had purchased $32.6-million worth of numerous off-the-shelf standard commercial items of equipment and supplies. These were bought on purchase orders, rather than under subcontracts, although still on a competitive basis.

By Oct. 31 total purchases by others than Kiewit totaled $202 million. And on Nov. 27 the AEC approved 11 additional materials subcontracts totaling $5 million, bringing the total project commitments for materials and equipment up to $307.7 million.

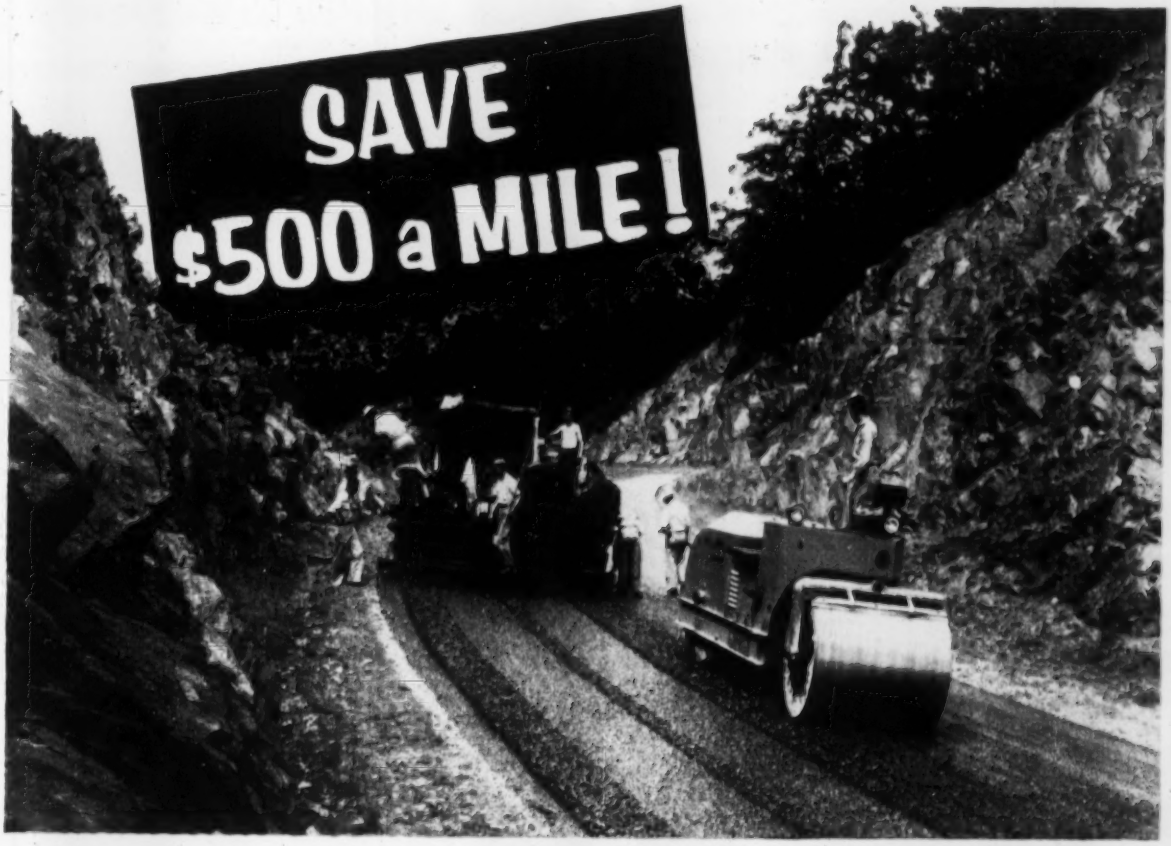
Construction subcontracts awarded up to Oct. 31 numbered 68, said Dunbar, and totaled $66.7 million. Three additional such contracts, totaling $1.9 million, were approved Nov. 27, bringing the total of the subcontract construction up to $68.6 million.

• **Employment**—For the week ended Oct. 31, total employment at the site —including construction, operations, architect-engineer personnel, and AEC —was 12,367. Of this number 11,323 were employed on construction.

In concluding his talk before the Portsmouth Chamber of Commerce, Mr. Dunbar claimed that the good progress on the project to date was due to a unity of spirit and purpose. "Credit must be given," he said, "to the concerted and cooperative efforts of our own organization, our contractors and suppliers, organized labor, your local communities, as well as the many state and local officials and organizations upon whom we must rely for assistance."

Dunbar is assisted by R. H. McCulloch, deputy area manager. Division chiefs include Leo M. Buhr, engineering-construction; B. W. Menke, administrative; W. C. Youngs, operations; and A. A. Vergari, finance.

George C. Holling is project manager for Peter Kiewit Sons' Co., and R. L. Senior is the man in charge of operations.



UPWARDS to $500.00 a mile could be the savings you make with the Adnun Black Top Paver, equipped with the Adnun Fluid Level. With the Adnun you can figure right on the "button" and eliminate the excess you pour into a road to be certain of meeting grade line specifications.

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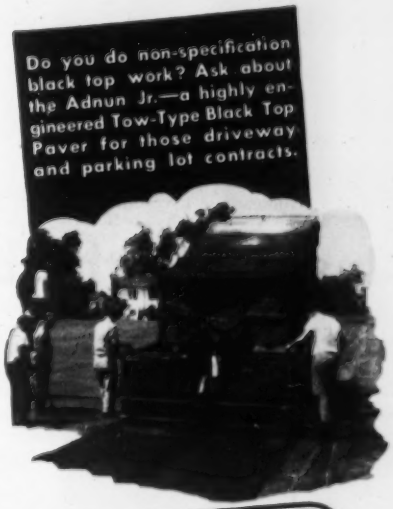
Overlapping action of the Cutter Bar Screed makes a tight joint and reduces raking. Sturdy construction eliminates the rebuilding so often necessary with other machines. Modern electric screed heating gives better heat, free from danger and the many other advantages combine to assure a fast job at lower cost.

Don't be swayed by preconceived opinions. You owe it to yourself to find out about this and other Adnun advantages. Let us tell you more about it.


Do you do non-specification black top work? Ask about the Adnun Jr.—a highly engineered Tow-Type Black Top Paver for those driveway and parking lot contracts.

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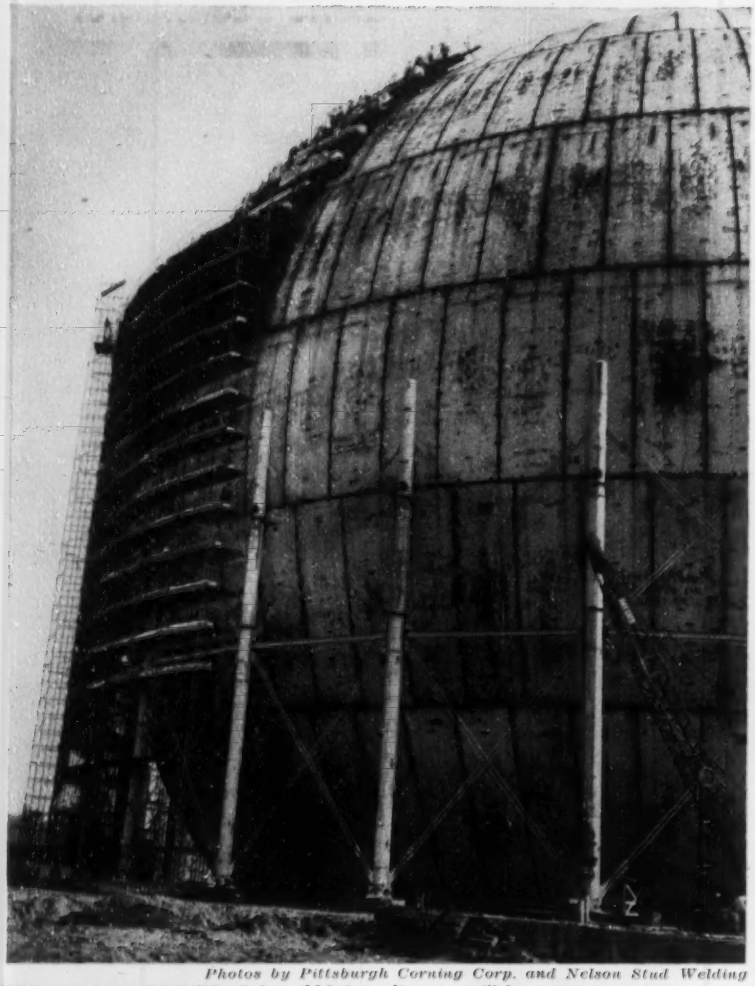


Photos by Pittsburgh Corning Corp. and Nelson Stud Welding

FOR ATOMIC POWER—Sphere 225 ft in diameter will house tests on atomic power plant for submarine. Everything about the job was big, including . . .

Insulating the big ball

In the Atomic Era everything is big except the atom.

The AEC—operating through the General Electric Company—has made this concept of bigness striking in the atomic submarine engine testing sphere at West Milton near Schenectady, N. Y. (ENR April 9, 1953, p 32). The sphere, 26 times larger in volume than the largest sphere previously constructed, is 225 ft dia.

• **Glass insulation**—Insulation of the sphere presented some unique problems both from the application technique and materials handling standpoints. Basically, the job was to apply more than 138,000 sf of cellular glass insulation, and then to finish it with a base spray coat of asphalt cutback, glass fabric membrane, and a final finish coat of the cutback. Cellular-glass insulation was selected because of water-resistant properties, which give it a stable insulation or heat-transmission factor.

The application of the insulation, actually, was a rather uncomplicated procedure in spite of the size of the job. By stud-welding 10-gage mild steel headless pins 2½ in. long to the steel surface of the sphere it was possible to impale the insulation blocks on the pins. After the pins were in place and before the insulation was impaled, the surface of the sphere was given a protective spray coat of asphalt cutback. The exposed heads of the pins, on which the blocks were impaled, were then secured with friction clips and the insulation locked into place. Rigid, cellular glass insulation is particularly adaptable to this type of application because it is easy to impale yet rigid enough to stay put.

The stud weld pins were set 9 in. on centers on horizontal circles drawn at 12-in. intervals on the sphere. Special care was given to the pin placement so that each 2x12x18-in. block, when laid up with the long edge in a horizontal position, would be supported by two pins. The blocks were fitted into place using a level guide so that all the joints would be tight and straight after the block was impaled on the weld pins. The clips were then attached to the pins and recessed into the insulation about ⅛ in. Because the cellular glass shapes easily, it was simple to recess the clips by gouging the indentation with a piece of pipe or scrap wood. The protruding end of the pin was then clipped flush against the clip and the indentation smoothed over with calking compound.

After the insulation was applied to the surface, all the intersections at building walls, supports, entrances, etc., were beveled with the calking compound and flashed with glass fabric. Fibrated cutback asphalt was then sprayed at a rate of two gallons per 100 sf over the insulation. Glass fiber membrane was then laid into this tack coat and softly brushed to eliminate any wrinkles or pockets. Glass fabric sections were lapped 4 in. to 6 in. A subsequent spray coat of the fibrated asphalt cutback was applied at a rate of five to six gallons per 100 sf to provide a finish coat ⅛ in.-thick.

The contractor was Lewis & McDowell, Inc., of New York City.

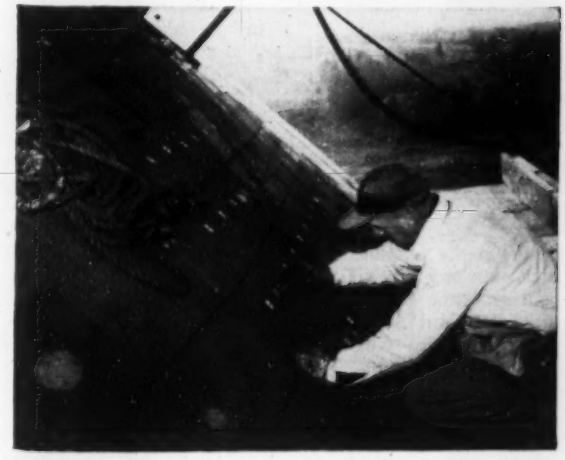
• **Lugs aid scaffolding**—One of the problems in the insulation application was the scaffolding. It was not practicable to erect a superstructure around the sphere because of the time and money involved. (On ordinary spheres, insulation contractors usually must figure as much as 15% of the total cost as scaffolding cost.) The expense was greatly reduced by erecting scaffolding on only a portion of the sphere's circumference, and by taking advantage of steel lugs already welded to the sphere. These lugs extend from an elevation 30 ft. above grade to the top and are meant to be permanent.

The lugs project about 1½ in. from the sphere and were covered with insulation as the scaffolding was moved to the next position around the circumference. The lugs, above the equator of the sphere, support adjustable cradle-like scaffolding that requires no vertical bracing between sections. At and below the equator, the lugs serve to anchor the usual scaffolding arrangement. Without the lugs, however, the reinforcing system would have been much more complicated, time consuming, and costly.

Step-by-step with the atomic-sphere insulation contractor

1. Studs spaced at 9 in. x 12 in. on centers are welded to sphere's 138,000-sf surface. These will hold insulating blocks.

2. After steel is sprayed with asphalt, cellular-glass blocks are shaped and impaled on the studs.



3. Friction clips are driven onto studs. The clips nestle into recesses hand-cut in the insulation, holding it securely.

4. Studs projecting from friction clips are snipped flush with clip by man with wire clipper.

5. Calking compound is troweled over indentations left by recessed clips, to form an even surface on the insulation.

6. Glass fabric is placed over an asphaltic tack coat, then the fabric is covered with a fibrated cutback asphalt.

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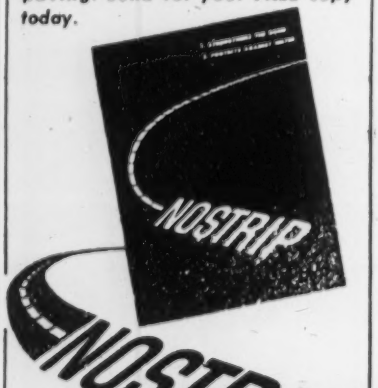

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Open-end bond plan grows with city

Ordinance allows new bond sales as revenue grows—enables Joliet, Ill., to expand water-sewer program

Joliet, Ill. (pop. 52,000) is in the midst of a long-range water supply and sewerage expansion program that takes into account another 43,000 people living in its suburban fringe. How improvements and extensions are being financed is an answer to one of the thorniest municipal problems.

Joliet's water and sewerage master plan, drawn in 1947 by consultants Consoer, Townsend & Associates, of Chicago, included sanitary sewers extending into every subdivided area either in or contiguous to the city. Ultimately it would add more than 10,000 new connections to the system at a cost of roughly $2.6 million. A 12-mgd primary sewage treatment works would be built at $1.2 million. The plan also included new well water supplies and a pipeline (now installed) plus water main extensions and elevated storage.

• **Question. How to finance all this?**

A $4-million expansion program got city approval and revenue bonds backed by both water and sewer charges (see table) were issued. Customers outside Joliet's city limits pay 150% of these rates, and a connecting charge of $375 has been levied against new customers in justice to those who already have paid for existing facilities through past assessments.

The connection charge is the key to Joliet's continuing program. Present prospect is that income from it will enable the city to sell at least another $2-million worth of revenue bonds for completion of the necessary primary treatment works, additional interceptors and elevated water tanks.

In addition, the city is accumulating funds for lesser needed construction work at a rate of $127,000 per year now, and an estimated $214,000 per year by 1975.

Accumulated surplus may be used for underwriting issuance of additional bonds for capital improvements with this stipulation in Joliet's $4-million bond ordinance:

"While any Waterworks and Sewerage Revenue Bonds issued hereunder are outstanding any additional revenue bonds for improvements and extensions issued shall not share ratably and equally in revenues . . . until it is shown by earnings . . . that the revenue derived from the combined waterworks and sewerage system for the fiscal year preceding were sufficient to pay all costs . . . and leave a balance equal to at least (130%) of the average principal and interest requirements on bonds then outstanding, exclusive of any reserve for interest, and (130%) of the average principal and interest requirements on bonds then proposed to be issued . . ."

This open-end revenue bond ordinance was deemed by the consultants the best way to keep water and sewer service abreast of foreseen growth of the city of Joliet. New industrial plants with their demands for exten-

(*Continued on page 44*)

Monthly rates are base revenue

	Consumed per month	Water rate per 100 cu ft	Sewer rate per 100 cu ft	Combined water & sewer per 100 cu ft
First	200 cu ft	$0.60	$0.15	$0.75
Next	800 cu ft	.56	.14	.70
Next	2,000 cu ft	.53	.13	.66
Next	4,000 cu ft	.43	.12	.55
Next	7,000 cu ft	.25	.10	.35
Next	50,000 cu ft	.17	.05	.22
Next	70,000 cu ft	.16	.04	.20
Next	70,000 cu ft	.15	.03	.18
Next	140,000 cu ft	.13	.02	.15
All over	344,000 cu ft	.12	.02	.14

Minimum rate for water and sewer service—$1.70 per month.
Minimum rate for water service only—$1.20 per month.

General view of project during paving operations. One section of new interchange crosses bridge (upper right) and proceeds along embankment in background.

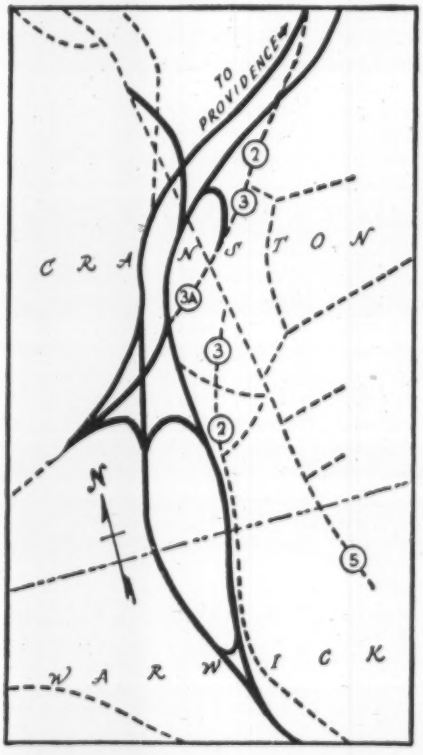
Jack Ramos (second from left), general superintendent for M. A. Gammino Construction Co., with (left to right) Sidney M. Budlong, Albert Capaldi and Carl Parker, state highway inspectors.

New Interchange Makes Things Easier for Bewildered Motorists

Until recently, the Cranston-Warwick area of Rhode Island, southwest of Providence, was no place for the timid motorist, or the bewildered stranger. For in that locality Routes 2, 3, 3A and 5 converged, the result often being a horn-tooting, temper-fraying bottleneck.

The aggravating condition has now been eliminated by the construction of the Meshanticut Interchange, a 1.48-mile double-barreled ribbon of concrete planned by the Rhode Island Dept. of Public Works, Division of Roads & Bridges. The newly opened highway, complete with sweeping turns, connecting lanes, bridges, culverts and service roads, keeps cars on the move, and cuts minutes from any trip through the area.

M. A. Gammino Construction Co., Providence, were the contractors for this important highway-improvement project. The engineers were Charles A. Maguire & Associates, also of Providence. Bethlehem furnished dowel units, fabricated steel and reinforcing bars.



Heavy lines show sweep of Meshanticut Interchange, in Cranston and Warwick, R. I. The new road eliminates congestion near where Routes 2, 3, 3A and 5 converge.

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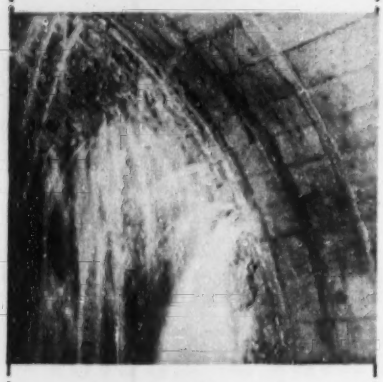
BETHLEHEM STEEL

SIKA STOPS LEAKS FAST



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4. Use Sika No. 2 mortar (sets in 20 seconds) to plug bleeders.
5. After sealing all leaks, apply a protective cement coat over entire surface.

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Additional Sika compounds cover the following specific problems: TO SEAL LEAKS AGAINST PRESSURE, TO SEAL JOINTS OR CRACKS, TO REPAIR NON-LEAKING SURFACES, TO REPAIR STRUCTURAL EXTERIORS, TO PLACE GUNITE OR PRESSURE GROUT, TO PRODUCE HIGH QUALITY CONCRETE.

Ask Sika's Engineers for details and recommendations.

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sive water supply have been added to normal population growth. Income has increased accordingly—It has more than doubled in the last five years.

Customer reaction to the service rates and connection charges are described as "most satisfactory."

It takes a little extra administration to make collections. The city has found it advisable to employ a full-time inspector to guard against surreptitious connections to new water mains or sewers. (Whenever an extension of either kind of pipe goes into a new area—inside or outside the city—a legal description is filed with the Recorder of Deeds. And the Water Commissioner records the location of all new lines and the status of connection charge payments for lots benefited.

Softening, extension to a Lake Michigan point of supply, or connection with a possible Chicago metropolitan water district are in the cards for Joliet's water supply. Which is chosen depends on water-sewer revenue profits over the next four or five years. Whatever is built, it should be financed under present rates through provisions of the open-end bond issue by using connection charge funds or by future bond sales.

Joliet administrators responsible for the present bond ordinance include Mayor Arthur Janke—who last year represented the U. S. Council of Mayors at London's Coronation ceremonies—and Chairman George Lloyd of the City Planning Commission.

Parking space in new buildings is urged by plan commission

All new commercial structures would be designed with accommodations for off-street parking or garaging if a new zoning amendment urged by the New York City Planning Commission is adopted.

Under the new ordinance no existing buildings would be affected, and the number of spaces required would be determined by the use and size of the structure.

The amendment is destined for some stormy sessions of controversy if preliminary discussions are any indication. One member of the commission, Lawrence M. Orton, objected (vainly) to having a hearing date for the issue set. He contended that it would force builders and owners to spend large sums of money for parking facilities that would, if anything, attract more vehicles into areas already strangled by traffic.

Commission Chairman John J. Bennett, however, said it was hoped that the proposal for garages in the new commercial structures would be a device "to help save the city from traffic strangulation."

Proponents of the measure stressed that, unlike many similar ordinances in other cities, this one would not be discriminatory—affecting only apartment houses, group houses and a few specific places of assembly—it would include hotels, museums, legitimate theaters, movie houses, race tracks, dance halls, skating rinks, pool parlors, bowling alleys, restaurants, banks, offices, showrooms, manufacturing plants, laboratories, schools and colleges.

Exempt would be places of worship, public parks and playgrounds.

The commission set a special hearing date for 10 a.m., March 5, in the Board of Estimate Chamber, New York City Hall.

Slum critique to be held—rehabilitation's the theme

The NAHB has set the stage for three days of intensive instruction for municipal officials looking toward the obliteration of slums through rigid enforcement of minimum health, safety and sanitation standards of housing.

The meeting, to be held April 12-14 in Trenton, N. J., will be attended by more than 500 municipal officials and civic leaders from 30 Eastern cities.

Information on the procedures of setting up rehabilitation programs in the participants' cities will be provided under the direction of G. Yates Cook, head of the association's Housing Rehabilitation Department.

Assisting as "instructors" will be Mayor deLesseps S. Morrison, of New Orleans, La., and other representatives of that city. Experience gained during organization of a private-enterprise rehabilitation campaign in their city, last fall, it is believed will enable this group to lend valuable assistance through first hand knowledge of problems encountered there.

The Trenton conference will be the first of a series of schools to be conducted by the association throughout the country. During these sessions the slum problem as a whole will be attacked on a state-wide basis.

"Underground lake" persists as city and contractor row

The underground lake that plagued contractors during construction of a 6,200-ft sewer tunnel in Spokane, Wash., (ENR Jan. 21, p. 45) is still giving trouble.

Work on a major section of the $4.7-million project stopped for two

days in mid-January when the contractor and city council deadlocked over expense of grouting to plug leaks that developed in the 1-ft-thick concrete wall of the tunnel.

The contractor, Charles Power & A. J. Cheff Construction Co., contended that the city should authorize unlimited grouting at city expense, while city Engineer Charles Davis, with the support of the five-man city council, maintained that the contract requires the contractor to bring the sewer tunnel within specifications at his own expense.

While the contractor and council remain deadlocked, work has resumed at the city council's order without a settlement of the dispute.

Davis said specifications require that leakage be reduced to 10,000 gal per mi in 24 hours, and said the leakage now "is 20 times that." He acknowledged that the tunneling job, involving construction through water-saturated gravel—an "underground lake"—had been a tough one and that Power & Cheff had done their job well.

The contractor previously had requested—and had been refused—permission to grout into the saturated gravel during tunnel construction. All that remained when the leakage dispute arose was to stop the leak, clean up and seal the tunnel to finish the unit, Section B-2, a $755,000 link in the disposal system.

Davis said his office had offered advice but refused to order any specific procedure because "then the city would assume the responsibility of the contractor." The city engineer suggested that grout with an admixture—grain, sawdust or other material—be pumped into the ground around the tunnel. The admixture would swell and hold its place in tunnel leaks until a permanent seal could be completed.

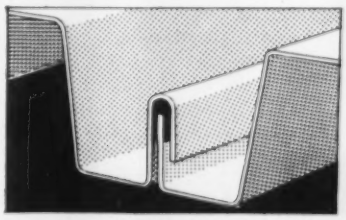
In the hope of avoiding the situation that now exists, the contractor previously had accepted a city engineer's suggestion that concrete for the tunnel be an eight-sack instead of a six-sack mixture. The entire tunneling operation on Section B-2 has been difficult, and its completion is a year overdue this month.

Drive nets hospital

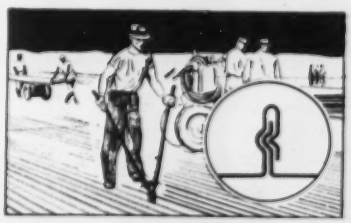
Construction of a $5-million East Side hospital in Indianapolis, Ind., will start in April, the Community Hospital Board has announced. Funds have been obtained by public subscription in a drive backed by all of the city's civic groups. Preparations of plans leading to the obtaining of bids is under way.

Quickly erected Q-Deck helps lower roof fire hazard

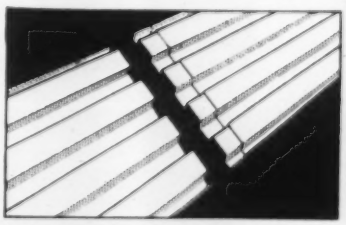
The many unique features of Robertson Q-Deck make it of special interest to the architect and engineer who is concerned about the fire hazard aspect of his flat roof design. To begin with, Robertson Q-Deck is designed with tight side and end laps to eliminate the need for an inflammable vapor seal. Its two-foot width and long span characteristics mean fewer joints, and its zinc-coated surface (or basic Galbestos) eliminates the need for field painting.



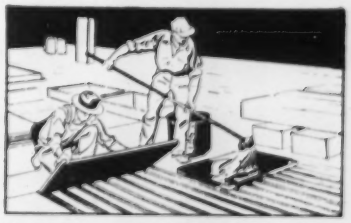
Robertson Q-Deck side laps are designed to form a standing seam. A seal in the form of a continuous caulking material assures a vapor-tight joint.



A special Robertson clamping tool mechanically fastens the side laps together, forming a steel fire barrier that remains intact as long as the structural supports are in place.



Ends of Robertson Q-Deck are sized and countersunk to produce a tight, smooth, two-inch lap joint. This lap, along with the tight side laps, provides a vapor-sealed roof construction.



Excessive amounts of asphalt are eliminated on Robertson Q-Deck because the adhesive is applied to the *insulation . . . not to the steel deck.* This also results in a better bond between the steel and the insulation.

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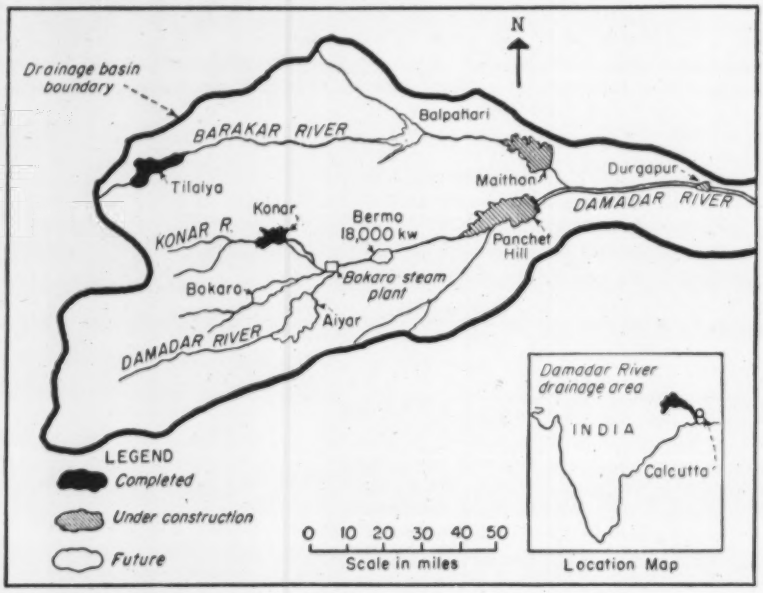


DRAINAGE AREA for India's "TVA" runs into the Bay of Bengal.

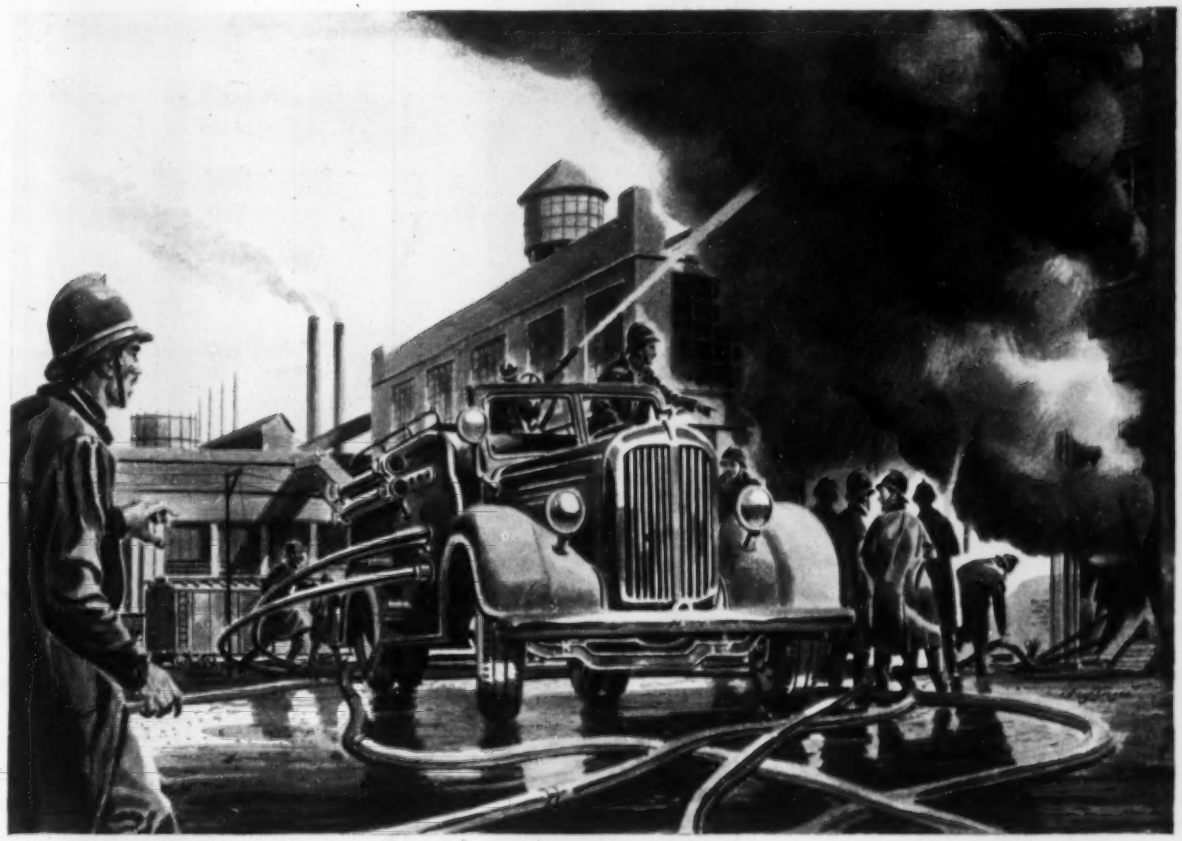
India's "TVA" shows good progress

The nine-dams-and-a-steam-plant scheme which India's Damodar Valley Authority has planned as a power, irrigation and flood control development northwest of Calcutta (ENR May 24, 1951, p. 33) starts 1954 with a good record of progress behind it. Two dams and the power plant are completed. Three other dams are under way. And the four dams, reserved for the second phase of the development, are in the design stage. The authority was organized in 1948 to exploit a valley rich in mineral deposits and of high farming potential.

The first facility to go into operation was the Bokaro steam station, where a 50,000-kw unit went on the line in February, 1953. Two more 50,000-kw units were installed during the year, leaving one more to be added at a later date. The station operates on low-grade coal from strip mines a

(*Continued on page 48*)

TILAIYA DAM impounds a fall reservoir while cleanup operations and powerhouse tailrace excavation continue downstream.



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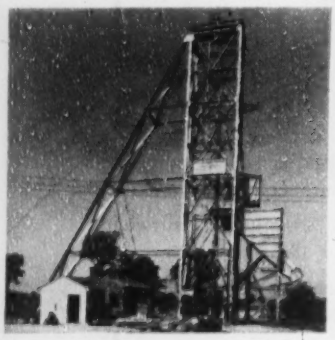

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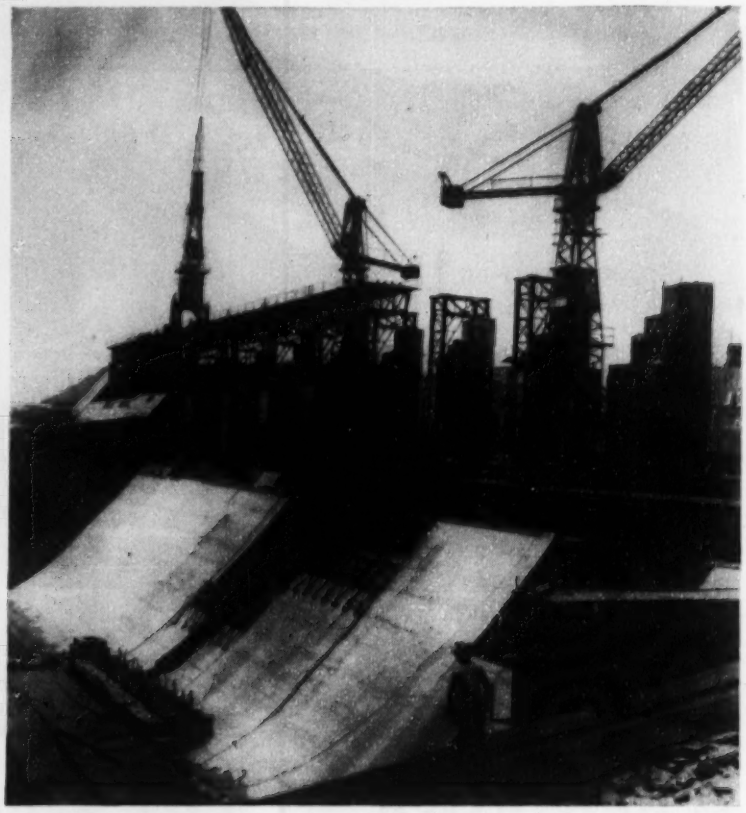

KONAR DAM to be completed this month will operate a 40,000-kw power plant and provide irrigation for nearly 60,000 acres of land.

few miles away, and utilizes Bokaro River water for its condensers.

In order to assure year-round water supply for the steam station, a storage reservoir was located on the river about 17 miles upstream, and its dam, Konar, will be completed this month. In addition to a concrete spillway section 160 ft high and 910 ft long, Konar contains about 10,000 ft of earth embankment. There are also 2,200 ft of earth saddle dikes around the reservoir. The 260,000 acre ft of water it impounds also will provide irrigation to nearly 60,000 acres of farm land and operate a 40,000-kw power plant, which has been envisioned but not yet authorized.

The first dam to be completed by the DVC was Tilaiya on the Baraker River. It has been in service during most of 1953 supplying water to some of the 75,000 acres it is designed to serve and operating its 4,000-kw power plant. Tilaiya is a concrete gravity section dam, 100 ft high and 1,150 ft long, including a 510-ft spillway. It impounds 320,000 acre ft of water.

The two largest dams in the project, Maithon and Panchet Hill, are actively under construction. Both are earthfill structures joined to concrete sections that include the spillways. Maithon Dam on the Baraker is 172 ft high, its earth section 2,000 ft long and its concrete section 1,300 ft long, of which 622 ft is spillway. It will impound 1,104,000 acre ft. In addition to the main dam there are 8,600 ft of dikes. Maithon will irrigate 270,000 acres and operate a 40,000-kw power plant. In addition its reservoir provides 725,000 acre ft of controlled flood storage.

Panchet Hill Dam is on the main stem of the Damodar River, and is also a flood storage project. It will be 133 ft high, with an 1,800-ft earth section and a 775-ft spillway. Supplementary dikes total over 21,000 ft. The storage capacity is 1,214,000 acre ft, providing water to irrigate nearly 700,000 acres and to operate a 40,000-kw power plant.

The fifth dam under construction is a diversion structure across the Damodar at Durgapur. From it will fan out an extensive system of canals whose water will be used to irrigate

(*Continued on page 50*)

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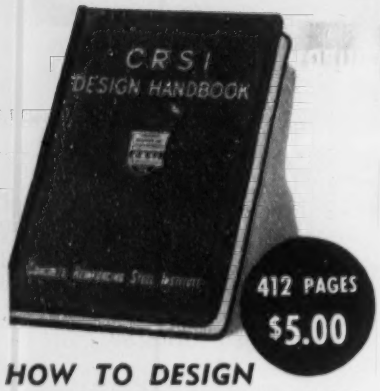

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over one million acres of rice lands in the lower valley, and permit them to produce two instead of only one crop a year. Durgapur is a masonry structure 38 ft high equipped with 34 gates. Its total length is 2,271 ft.

The four other dams in the scheme —Aivar, Bermo, Bokaro and Balpahari —will comprise the second stage of the development and are still in the early design stages.

A. M. Komora, formerly with the Tennessee Valley Authority, is chief engineer of the Damodar Valley Authority. Two other Americans, S. O. Harper and Adolph Ackerman, serve on the DVA's three-man consulting board. Outside consultants have also been employed on four of the facilities—Kuljian Corp., Philadelphia, on the steam plant; Gruner Brothers, Basel, Switzerland, on Konar Dam; and Harza Engineering Co., Chicago, on Maithon and Panchet Hill Dams.

All construction is done by Indian labor, hired and supervised by DVA, except in the case of Konar Dam which was built by two Indian contractors, Hinds Construction Co. and Patel Engineering Co.

African hydro project goes into operation

Owen Falls Dam, at the headwaters of the Nile River at Lake Victoria, Uganda, British East Africa, began producing power last month when the first of six turbines started turning. To be dedicated by Queen Elizabeth in April, the Owens Falls development was started in 1950 and has cost $60 million.

Although the site of the dam is about ten miles downstream from the point where the Nile pours out of Lake Victoria, the project will raise the level of the lake about 10 ft. Lake Victoria is almost as big as Lake Superior in this country.

At full capacity Owen Falls hydroelectric station will produce 150,000 kw at a head of 70 ft. The dam has been designed with the dual purpose of supplying electricity to Uganda's growing industry and controlling the Nile for the benefit of the Sudan and Egypt. Agriculture along the Nile's 3,800-mile course will be affected materially.

Egypt will pay Uganda $3 million as a compensation for the loss of power resulting from seasonal restriction of the Nile's flow to suit Egyptian agriculture. Egypt also will pay for a slight increase in the height of the dam which increase the government requested.

Contractors for the construction of the dam are headed by the firm of Christiani & Nielsen, of Copenhagen, Denmark.

Two new pipelines in France are scheduled for NATO

Two fuel pipelines have been authorized by NATO powers to extend from Channel and Mediterranean ports to airfields in France, the Low Countries, and West Germany. Routes and terminals of the projected pipelines have not been disclosed, but it is believed that one of the lines would extend up the Rhone Valley from Marseilles and the other would begin at Le Havre and extend toward the east.

The two new lines will make up—along with a line already under construction—a 1,920-mile network of fuel pipelines ranging from 4 to 10 in. in diameter and costing some $100 million. The pipeline already under way is a U.S. undertaking that will convey fuel from St. Nazaire on the Atlantic Coast of France to Metz near the Luxembourg border. Since the two new pipelines are being handled by NATO forces, the U.S. will contribute 43% of their cost.

According to estimates of the Foster Wheeler Co., New York, which was chosen to supervise the undertaking, the pipeline network will be completed in 1955.

International briefs . . .

• **Home planning service**—The Ontario Association of Architects has announced a new architectural service: Individual plans for houses up to $15,000 in value for a fee of $150. Work—done on a spare time basis by association members—includes practically all architectural services except supervision of construction. Started in Ottawa, the idea will be expanded to cover other Ontario chapters in Toronto, London, Hamilton and Windsor.

• **Sweden-Denmark link**—A $70-million bridge-tunnel project is being considered as a means of crossing the 11-mi Oresund Straits that separate Sweden and Denmark. This is the plan submitted to the two governments by a syndicate of three Swedish and three Danish construction firms: a 4-mi bridge from the Swedish coastal city of Malmo to the Danish island of Saltholm; a 3-mi road across Saltholm; a 1¾-mi underwater tunnel from Saltholm to Amagar Island; another bridge section and road leading into Copenhagen.

OBITUARIES

Carl Franklin Braun, 69, head of an engineering firm specializing in design and construction of oil refineries and chemical plants, died Feb. 4, in San Francisco. He founded C. F. Braun & Co. in San Francisco in 1919, moved to Alhambra, Calif., a Los Angeles suburb, in 1922. The company has built in this country and abroad, refining and chemical facilities valued at more than $700 million. Braun was well known for his work on heat exchanger design. He was author of books on management, leadership and human relationships. A graduate of Stanford University and Occidental College, he was a trustee of California Institute of Technology and Claremont Men's College, and a consulting professor of the Stanford Graduate School of Business.

Lewis Bernard Peck, 54, division engineer for the North Carolina State Highway Commission, died Feb. 16. He had been with the department since 1921. In 1931 he was promoted to division engineer. He was a civil engineering graduate of North Carolina State College.

J. Donald Braun, 47, office manager and associate in offices of Thomas H. McKaig, consulting engineer, Buffalo, N. Y., for 20 years, died Feb. 14. He was president of the Structural Engineering Clinic of Buffalo.

Harry E. Neal, 70, for 30 years traffic and safety engineer of the Ohio State Highway Department, died at Columbus Feb. 15. He was a C.E. graduate of Ohio State University, 1911.

John Stearns, 71, executive assistant to Hughes Aircraft Co.'s assistant general manager and director of services, died Jan. 21 in Los Angeles. During his 11 years with the Hughes firm he was in charge of design and construction of launching facilities on Terminal Island, the moving of the Hughes flying boat from Culver City, Calif., to those facilities, and its launching. Formerly he was plant engineer. Before joining Hughes he was division engineer on the Colorado River Aqueduct, principal engineer for the Terminal Island Naval Base, and a staff member of the Bureau of Power & Light, Los Angeles; J. G. White Engineering Corp., New York; Federal Power Commission, Washington, D. C.; Los Angeles County Housing Authority and W. A. Bechtel Co. He received a civil engineering degree from Cornell University.

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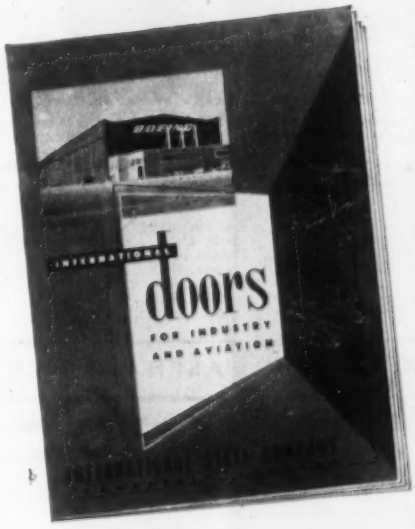

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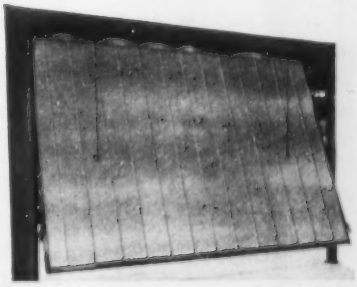

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April Materials, and Labor Prices will appear in April 8, 1954 issue

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	Paper	Bulk	Mortar	1½ in.	¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 c.y., del
Atlanta	$3.87	$3.56	$3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.99	$1.99	$0.21	$0.21	$12.06
Baltimore	3.90	3.60	3.53	2.60‡a	2.60‡a	2.00‡a	2.75‡a	2.80‡a	2.65‡a	2.60‡a	.17	.17a	11.45
Birmingham	3.26	2.60e	....	2.53n	2.53n	2.23n	2.64	2.64	1.25	1.45	.165	.165	11.00
Boston	4.16	3.84	3.96	2.50a	2.50a	2.50a	1.50a	‡1.60a	....	....	.215	.245a	12.00h
Chicago	3.48	3.17	....	3.25‡b	3.25‡b	3.65‡b	3.25‡b	3.25‡b	2.25‡	2.25‡	.23	.23b	11.70/11.94
Cincinnati	3.76	3.55	3.55	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	....	....	.21	.225a	10.95
Cleveland	N. A. in C. L	3.19e	....	2.05cf	1.85f	1.65	4.10a	4.10a	3.35‡	3.15‡	.....	.22	14.40d
Dallas	3.15	2.85	2.90	2.18	2.28	1.84	2.22	2.38	.....	.....	.11e	.2675	9.40
Denver	4.04‡	3.74	4.04	1.85	2.00	1.20	....	....	....	....	.23	.255a	10.50
Detroit	3.92	3.62	3.57	4.50‡b	4.50‡b	4.00‡b	4.25‡	3.75‡	3.75‡	4.25‡	.21	.22a	12.00f
Kansas City	3.52	3.22	3.30	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	.....	.....	.21a	.24c	12.25bp
Los Angeles	4.52a	4.00a	5.00	2.16a	2.36a	2.11a	2.21a	2.21a	.....	.....	.14fm	.248m	11.88lh
Minneapolis	3.95d	3.64d	3.56	2.55‡ag	2.55‡ag	1.50‡ag	2.75‡ag	2.75‡ag	.....	.....	.19ik	....	12.75fk
Montreal	3.16ac	2.96ac	....	3.00r	3.00r	2.25	1.65ij	1.90ij	....	....	.20	.20a	10.55ab
New Orleans	3.35	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	.....	12.90
New York	4.01	3.70	3.53	2.75bk	2.75bk	1.80bk	2.70bl	2.70bl	.....	.....	.....	.....	13.55an
Philadelphia	3.58/3.97‡	3.27/3.64‡	3.58/3.63‡	2.75‡rp	2.75‡rp	2.15‡rs	2.30‡	2.40‡	2.00	1.90	.22/.25	.....	12.50ao
Pittsburgh	3.47	3.19	3.47	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.22	13.00
St. Louis	3.42/3.63b	3.09/3.35b	3.25/3.42	2.90am	2.90am	2.30/2.90am	1.70ij	1.70ij	1.50	1.50	.22	.28ci	11.40
San Francisco	3.56	3.16	....	1.92	1.92	2.02	2.02	2.02	.....	.....	.....	.27cl	11.25c
Seattle	4.65a	3.35a	5.80h	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	.....	.....	.25i	.3325i	11.40f

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers discount not incl. *d* Dealers sell only LCL. *e* Truckload lots, destination price. *h* LCL.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ¾". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l 3-mi zone.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash. *j* Less 1% for cash. *k* 8 x 8 x 18, .21. *l* F.o.b. plant San Rafael. *m* F.o.b. yard.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *d* 1–3 mi. zone. *e* 2,000 lb comp. *f* 2500 lb. comp. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l 3-mi zone. *r* Incl. 25¢ heating charge. No charge after 3/15.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.75†	Buffington, Ind	$2.70†	Steelton, Minn	$2.80†	Muskegon, Mich	$2.85†	Toledo, O	$2.80†
Clinchfield, Ga	2.75†	Independence, Kan	2.65†	Leeds, Ala	2.60†	Saginaw, Mich	2.75†	Milwaukee, Wis	2.90†
Kingsport Tenn	2.75†	Hannibal, Mo	2.70†	Duluth, Minn	2.80†	Wyandotte, Mich	2.75†	Green Bay, Wis	2.90†
West Des Moines, Iowa	2.80†	Northampton, Pa	2.75†	Hudson, N. Y	2.75†	Buffalo, N. Y	2.85†	Ironton, O	2.75†
Nazareth, Pa	2.75†	Universal, Pa	2.80†	Alpena, Mich	2.65†	Oswego, N. Y	3.00†	Montreal City	2.66
Bath, Pa	2.75†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich	2.75†	Cleveland, O	2.80†	W. Winfield, Pa	2.80†

† *Prices to hold for first quarter of* 1954.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

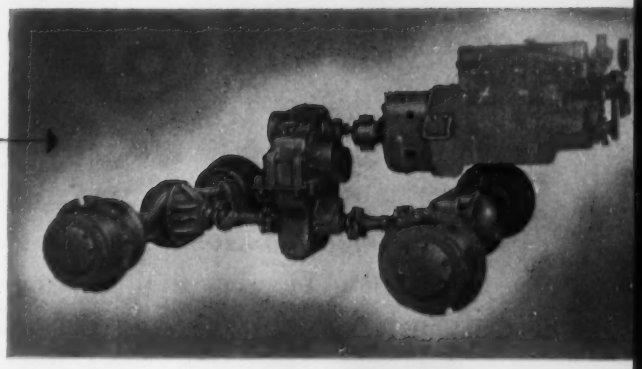
	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-break) Per gal. Tank car	Drums
Atlanta	$82.00	$41.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	75.00‡	.....	21.00i	.....	.0651i	0.1751i	.09w	.18iw	.09i	.095i	0.185i
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00a	23.00a	22.00aw	22.00aw	.....	.....	.09a	.105a	.22a
Chicago	155.00‡	90.00‡b	3.60/3.65‡j	21.05b	31.05b	20.05bw	30.05bw	.099bw	.1890bw	.0775b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	65.00d	5.03g	23.00k	.....	23.00k	.....	.1025kw	.....	.....	.11k	.18k
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	27.09	47.87	.098	.1014	.2128
Denver	.....	50.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	28.41	.....	28.41v	.....	.1188w	.....	.0925	.....	.211
Kansas City	e	e	e	15.00cl	.....	.06	.....	.065rw	.....	.055c	0.10	.....
Los Angeles	e	.....	e	16.00dmx	.....	16.00dnx	.....	18.00dx	.....	17.00dv	.0825j	.1725j
Minneapolis	.....	.....	2.97h	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montreal	.....	e	e	27.00n	39.60n	.135n	.198n	16.50nu	20.90nu	.132n	.184ns	.225ns
New Orleans	.....	.....	.....	17.50e	....o	17.50ev	....o	.085ew	....o	.0825s	.085	.....
New York	.....	.....	2.75f	23.80qCD	44.32qD	22.80tCD	43.57tD	.1023wCD	.1889w	.....	.1023CD	.1918D
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.095u	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00	40.00	.095	.10	.22
St. Louis	.....	.....	.....	18.66f	.....	.1758	.....	.084/.0865w	.....	0.155	.10	.....
San Francisco	.....	55.00e	.....	17.50q	33.00qp	17.50qkv	33.00qkv	20.00q	37.50q	18.75v	.085y	.....
Seattle	.....	.....	.....	17.50h	38.00h	17.25hv	.....	20.00h	.....	19.75hv	.085h	.095hv

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2¼ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6¢ treat. *g* 3" h 2" int., 8¢ treat. *i* 3 x 3¾ x 8½. *j* 2½", 6lb. tr.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40/80 penetr. *n* Tax incl. *o* Drums not avail. Shipped in steel bbl. *q* 40/85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85/200 penetr. *u* Per 100 gal. *v* Per ton. *w* Per gal. *x* Also tank trucks *y* F.o.b. Oakland. *z* F.o.b. refinery, Cleveland. *a* F.o.b. Norco, La. *C* Bulk. *D* Prices based on transporting to Manhattan via truck.

(*Continued on p* 55)

Here's Why The **MICHIGAN** *Tractor Shovel*
WILL DO MORE WORK FOR YOU!

* *This Power Train — from engine to tires — engineered and manufactured by Clark*



* **CLARK TORQUE CONVERTER** — 3-to-1 multiplication factor provides maximum torque *when it is needed.* Precise control in inching and digging.

* **CLARK POWER-SHIFT TRANSMISSION** — no conventional clutch; four speeds forward and reverse—direction control by lever on the steering column.

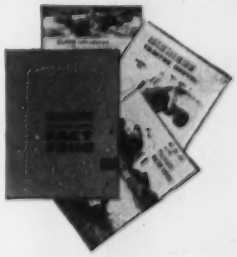
* **CLARK PLANETARY DRIVE AXLE** — final reduction in the wheel reduces the torque load on all gears and shafts.

RESULT — easier operation, utmost accessibility and simplicity of servicing, highest efficiency in shovel handling.

ADD greater weight and more horsepower than any front-end loaders of comparable capacity, and you see why you can Move More with a MICHIGAN*.

*A Trademark of Clark Equipment Company

For full information send for the MICHIGAN Tractor Shovel Fact-Folio — specifications, action photos, magazine article. The coupon will bring your copy.



CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY, Construction Machinery Division
390 Second Street, Benton Harbor, Michigan, U. S. A.

Please send the MICHIGAN Tractor-Shovel Fact-Folio

Name_____ Title_____

Firm Name_____

Address_____

City_____ Zone____ State____

DELIVERS WATER CHEAPER

Philadelphia Dresser-Couples 2-mile steel main in expanding program of general waterworks improvement.

In adding to many miles of Dresser-Coupled steel mains laid since the War, Philadelphia engineers again recognized the outstanding advantages of this type of construction. These twin steel lines meet the needs of central and southern Philadelphia.

Dresser-Coupled steel mains are a sound investment. The beam strength of steel pipe, plus the non-rigidity of both pipe and couplings, assures a husky, flexible, permanently tight line. Glass-smooth linings sustain high carrying capacity. Dresser-Coupled installations fit in well with existing structures . . . are readily adaptable for future changes.

Actual installation is fast and relatively simple. Lighter weight steel pipe is easier to handle. Long pipe lengths mean fewer joints. Small crews, with a minimum of skill, supervision and heavy equipment, make joints faster, surer. The result—lower cost, maintenance-free lines.

BE SURE **you get the *best* line at the *best* price. Always put steel pipe and Dresser Couplings in *your* specifications.**

DRESSER® COUPLINGS

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: Toronto, Ont.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES— CARBON STEEL	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$4.10	$4.10	$4.15	$8.90	....	$86.50	$104.00	Not	$5.275	$7.05	$5.125	....
Chicago Area	4.10	4.10	4.15	8.90	$4.925	86.50	104.00	avail-	5.275	7.05	5.125	....
Pittsburgh Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	able	5.275	7.05	5.125	$11.00
Buffalo Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	....	5.275	7.05	5.125	11.00
Cleveland	....	....	4.15	8.90	4.925	.....	.....	....	....	....	....	11.00
Youngstown Area	....	....	4.15	....	....	.....	.....	....	....	7.05	....	....
Geneva	4.10	4.10	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	4.925	.....	.....	....	....	7.05	....	....
Pueblo	4.30	4.70	4.75	....	....	.....	95.00	....	5.275	7.05	5.125	11.00

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price‡ 5 tons to carload lot b New billet	Rail steel	Add for switch	$/cwt for Del.	EXPANDED METAL LATH‡ Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING‡ Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$38.00‡	$42.00‡			
Baltimore	6.98	6.91l	....	....	....	42.00	45.00			
Birmingham	6.35	6.15	6.15	.05	.15	47.00p	52.00p			
Boston	7.06a	7.22	7.22	....	--	42.00	46.00			
Chicago	6.46	5.75f	5.75f	.0625	--	43.00C	50.00C			
Cincinnati	6.93ak	6.91r	....	....	.15	39.00xxee	43.00xxee			
Cleveland	6.79	5.61e	....	--	--	39.00‡	43.00‡			
Dallas	9.05	7.25	7.25	--	--	49.00	52.00			
Denver	7.95	7.30e	....	--	--	52.50s	64.50qs			
Detroit	6.91	7.04n	--	--	.30	50.50	54.50			
Kansas City	7.05nn	7.27	....	--	--	43.50	47.50			
Los Angeles	7.35fkk	6.85g	....	....	--	51.00	57.00			
Minneapolis	6.92kk	7.53ll	7.53ll	....	--	37.00	41.00			
Montreal	8.20iB*/9.20A	6.05i	6.05	....	--	46.00kk	51.00kk			
New Orleans	....	5.98ak	....	.05	--	66.00	80.00			
New York	7.20	7.01s	7.01s	--	.30	38.50st	44.00st			
Philadelphia	6.42	6.67	....	--	--	38.00‡	42.00‡			
Pittsburgh	6.40	6.40	....	--	.10	37.60	39.60			
St. Louis	6.86a	6.30e	6.30s	--	--	55.00aa	56.00aa			
San Francisco	7.25	6.85l	....	--	--	40.50	43.50			
Seattle	4.85e	6.20el	....	....	--	51.00mmm	57.00mmm			

‡ Delivered. *b* Quantity extras: under 700# add 50¢; 700–1499# add 25¢; 1500–7999# add 10¢. Size extras: #2 add $2.20; #3 add $1.10; #4 add 80¢; #5 add 62½¢; #6–7 add 45¢; #8–11 add 30¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivered in free delivery zone. *g* 8,000 to 39,999 lbs. *k* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 20 tons base. *p* Del. of 500 sq. yd. or more. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *w* Copper bearing. *y* $0.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales. *kk* 10,000–19,999 lbs. *ll* 5 to 8 tons, f.o.b. city. *mm* 2% off for cash. *nn* 1–5 tons. *qq* 10 tons to CL. *a* 2000–9999 lbs. *A.* Amer. struct'l shapes. *B.* Canadian shapes. *C.* Deliv to contractor. * Price change expected late in March.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft.; f.o.b. city 6" Pr Cl. 150	12" Sew Cl. 1	VITRIFIED SEWER PIPE Per foot; Delivered ASTM C13–44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. da.	36 in. da.	CLAY DRAIN TILE ASTM C4–34 Per 1,000 ft.; carload lots; f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft.; delivered: ASTM C 14–41 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	$248.00	$356.00	$0.90m	$3.40m
Baltimore	121.50	1.45	2.42	.578	.999	4.095A	11.1725A	178.20	274.80	.95	2.60
Birmingham	108.00	1.45	2.42	.42	.75	2.99	....	280.00‡	375.00‡	1.25m	2.75m
Boston	122.00	1.47	2.20	.553xxx	1.0665xxy	4.41xxy	11.90xxy	187.80x	289.20x	1.62mg	3.95mg
Chicago	107.00	1.45	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80
Cincinnati	108.00	1.47	2.29	.581y	1.120y	4.41y	11.375y	164.40	254.10	.80m	2.95m
Cleveland	108.00	1.47	2.29	.462z	.945z	3.66z	10.04z	158.00m	245.65m	.82m	3.10m
Dallas	112.00	1.47	2.54	.47	.87	3.85b	9.17b	.....	.....	.49	1.60
Denver	115.00	1.53	2.54	.45dd	.78dd	3.48dd	....	.....	.....	.74m	2.80m
Detroit	108.00	1.47	2.29	.75	1.45	5.75	15.50	230.00m	350.00m	.86	3.47
Kansas City	113.00	1.47	2.29	.53	.945	3.87	10.60	250.00	480.00	.80g	3.25g
Los Angeles	126.35	1.53	2.29	.62f	1.26f	5.21f	14.89f	228.20f	348.90f	.95	2.75f
Minneapolis*	112.00	1.49	2.42	.72mo	1.32mo	5.32mo	....	.....	.....	1.38kk	3.93k
Montreal	110.00	....	....	1.07z	1.73z	5.52z	8.93b	.....	.....	1.17k	3.11j
New Orleans	101.50	1.45	2.42	.53	.965	5.13	....	300.00kk	500.00kk	.65	2.29
New York	111.35	1.47	2.20	.61	1.22	4.82	12.81	.....	.....	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95A	12.65A	300.00‡	350.00‡	1.60k	3.95k
Pittsburgh	110.00	1.47	2.20	.468m	.864m	3.26m	8.71m	182.00	244.00	1.05k	2.50k
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.80	180.00l	380.00l	1.20il	2.85kl
San Francisco	127.00	1.53	2.29	.61d	1.20d	5.03d	12.57d	240.00l	400.00l	.73	3.02
Seattle	122.00	1.54	2.42	.51b	.91b	....	....	180.00c	.....	.77ss	2.30ss

‡ Delivered. *a* Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b* Extra strength ASTM C 200–44T: *c* 4-in., $90. *d* S8361-A. *e* 30-in. *f* F.o.b. factory. *g* Culvert pipe. Reinforced, ASTM C76–41. *k* Reinforced, ASTM C75–41. *s* Reinforced, ASTM C76–37. *j* Centrispun. No. standard specifications in Can. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *u* ASTM C13–40. *x* C.L.f.o.b. origin, freight allowed. *z* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa* *Extra strength ASTM C–200–50.* A standard strength. * 6", $1.67 per ft.; carlots, F.o.b. track Class 150. *bb* Freight allowed to destination in city. *dd* LCL delivered, f.o.b. truck. *ee* 2% off for cash. *ff* 21".

| | *WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote | | |

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.
(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 S4S	6x12 S4S	12x12 S4S
Atlanta	† $77.00	$80.50	$71.50	$74.00	$77.50	$81.00	$79.00	.....	.....
Baltimore	* 82.00	84.00	75.00	75.00	75.00	80.00	110.00	.....	.....
	108.00g	*102.00g*	*89.50g*	*89.50g*	*89.50g*	*89.50g*	*94.00*	*$100.00*	*$100.00*
Birmingham	† 80.50	82.50	70.50	80.50	83.50	85.50	95.50	.....	.....
	75.50	*75.50*	*70.50*	*70.50*	*70.50*	*69.50*	*75.50*	*75.50*	*75.50*
Boston	93.00a	96.00a	90/102*	92/104a	95/107a	98/111a	.....	.....	.....
	* *98.00**	*98.00*	*94.75*	*95.25*	*95.25*	*95.75*	*100.00*	*106.00*	*106.00*
Chicago	** 95.00	98.00	86/87	95.00	97.00	100.00	104.00	.....	.....
	97.00	*97.00*	*99.00*	*101.00*	*102.00*	*104.00*	*110.00*	*110.00*	*110.00*
Cincinnati	* 91.25	97.00	81.25	90.25	97.00	99.25	113.00	.....	.....
	108.50	*108.50*	*107.50*	*106.00*	*107.00*	*106.00*	*132.00*	*132.00*	*132.00*
Cleveland	** 88.00	90.00	87.00	93.00	95.00	98.00	.....	.....	.....
			98.00	*99.00*	*99.00*	*99.00*	*105.00*	*105.00*	*105.00*
Dallas	†† 65.00	72.00	65.00	65.00	65.00	65.00	130.00	.....	.....
Denver	* *Not in stock*		*101.00*	*101.00*	*101.00*	*102.00*	*122.00*	*135.00*	*140.00*
Detroit	‡ 108.00	112.00	100.00	108.00	113.00	115.00	.....	.....	.....
	97.50	*98.50*	*94.50*	*88.25*	*88.00*		*108.50*	*115.00*	*115.00*
Kansas City	* 105.50	105.50	105.50	103.00	106.00	.....	.....	.....	.....
	109.00	*109.00*	*109.00*	*109.00*	*109.00*	*112.50*	*155.00*	*155.00*	*155.00*
Los Angeles	! *90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*118.00*	*123.00*	*118.00*
Minneapolis	# *135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*135.00*	*155.00*	*155.00*	*155.00*
Montreal	ab85.00	97.00	85.00	88.00	100.00	.....	.....	.....	.....
	110.00	*110.00*	*110.00*	*110.00*	*110.00*	*110.00*	*105.00*	*105.00*	*105.00*
New Orleans	† 100.00	100.00	92.50	85.00	90.00	94.00	118.00	.....	.....
	† *97.00*	*101.00*	*109.50*	*109.50*	*107.50*	*107.25*	*107.50*	*117.50*	*107.50*
New York	' 105.00	108.00	110/113	115/120	115/120	120/125	150/160	.....	.....
			Range from $115.00 to $120.00				*135/150*	*145/155*	*145/155*
New York	** 83.00	85.00	70.00	84.00	86.00	87.00	118.00	.....	.....
	88.00	*88.00*	*90.00*	*90.00*	*91.00*	*91.00*	*102.00*	*112.00*	*112.00*
Philadelphia	‡		**Range from $110.00 to $127.00**				110/127	.....	.....
			Range from $120.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		**Range from $95.00 to $100.00**				110/120	.....	.....
			Range from $110.00 to $120.00				*130/140*	*140/155*	*140/155*
St. Louis	†c106.00e	108.00e	97.00d	105.00d	114.00e	115.00e	.....	.....	.....
			110.00d	*115.00e*	*115.00e*	*116.00e*	*161.50e*	*162.50*	*177.50*
San Francisco	A† *88.00*	*88.00*	*90.00*	*89.00*	*89.00*	*89.00*	*89.00*	*89.00*	*89.00*
Seattle	† *78.00*	*78.00*	*78.00*	*78.00*	*78.00*	*78.00*	*85.00*	*85.00*	*85.00*

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. †† Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* ¼ #1, ¼ #2 & ½ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

LONG LEAF Y. P.

Merchantable grade up to 20 ft.

2x12 S4S	12x12 S4S
$153.00	$156.00
115.50	155.50
.....	.....
132.00	132.00
134.50	134.50
.....	.....
130.00	128.00
.....	.....
220/250	220/250
190.00	190.00
210/220	210/220
110/120	115/125
.....	.....

PLYWOOD

Rail freight increment (See note for base price)

⅜"	¾"
$22.32	$27.24
25.92*	31.60*
21.78	26.58
25.92*	31.60*
22.45*	27.37*
25.00*	30.48*
25.37*	30.93*
18.72	22.80
13.92	16.98
25.00*	30.48*
16.56	20.16
16.61*a‡	20.25*a‡
19.89*	24.25*
.....	.....
18.72	22.80
25.92*	31.60*
.....	.....
25.92*	31.60*
25.92*	31.60*
18.72	22.80
12.22*a	14.91*a

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼". $171.00; on ¾". $191.00. Exterior plyform ⅜" $190.00, ¾" $212.00. For other centers add rail freight increment from table on proper size Oiling and edge sealing charges included. *a* Lower rate by water shipment *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a, Single or Double Thickness, A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2365
Baltimore	78%d	80%d	.2365
Birmingham	83%	83%	.1840
Boston	77–10%	77–10%	.2365
Chicago	76%	76%	.2365
Cincinnati	78%	78%	.2365
Cleveland	78–10–10%	78–10–10%	.2765
Dallas	75%	75%	.2440
Denver	79%	79%	.2415
Detroit	78–10–10%	78–10–10%	.2365
Kansas City	80–10%	80–10%	.2415
Los Angeles	73%	78%	.2390
Minneapolis	75–10%	75–10%	.2415
Montreal	40–5%bc	40–10–5%b	21.35h
New Orleans	78%	77%	.2415
New York	80–10%	80–10%	.3975g
Philadelphia	78%	80%	.2365
Pittsburgh	82%	82%	.2090
St. Louis	80–10%	80–10%	.2415
San Francisco	70%	70%	.2365
Seattle	73%	76%	.2390

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U.S.; $1.75 per 100 lbs. higher in Canada.

Glass: *a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.10.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 – .1965	.2215– .229	.2415– .249
Rocky Mtn. States	.189 – .2015	.2215– .229	.2415– .254
Pacific N. W. States	.1865– .199	.219 – .2315	.239 – .2515
Pacific S. W. States	.184 – .1915	.2165– .219	.2365– .2415

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt	6-in.	30 to 80-ft.	$0.51	....
12-in. — 2-ft. from butt	6-in.	80 to 89-ft.	.54	....
12-in. — 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in. — 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in. — 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in. — 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in. — 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in. — 2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in. — 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in. — 2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak:†	¢	....	....	....
	Pine	s	....	....	....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood:	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	....	3.40a	....	4.30/4.40a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood:	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	3.10	....	3.90	....
	Red Oak	3.00	3.75a	3.70	4.60a
	Sap Pine or Cypress	....	3.55a	....	4.50a
San Francisco	Douglas Fir	2.15e f	3.15af	2.90bf	4.25caf
Montreal	Birch or Maple	.... h	.... h	.... h	.... h

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *s* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb, f.o.b. works	.095
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb, dense	1.75
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb, f.o.b. works	10.35

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STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.00	$247.00	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$.....
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00k	41.00k	32.00	21.50	.....
Birmingham	126.00p	136.00p	.....	284.00p	.....	.....	23.50ff	28.00gg	29.25	17.30	.....
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	36.85p	39.85p	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	26.00	28.00	30.80	26.00	.....
Cincinnati	185.00j	195.00j	260.00jdd	.....	.....	.....	45.00j	46.00j	26.00j	26.00j	.....
Cleveland	170.00**	181.00**	.....	.....	.....	.....	34.50	34.50	28.25	23.25	32.00ss
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80bb	28.00bb	34.00bb
Detroit	130.00	138.00	259.00	.....	317.25	362.60	37.75cc	36.75cc	33.50	28.50	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	28.50	.....	32.00	26.00	28.50
Los Angeles	r	r	r	r	r	r	27.50‡	.....	34.00	34.00	35.00
Minneapolis	175.00p	196.00p	407.00p	196.00p	.....	.....	35.00ep	45.00	39.00bbe	29.00bbe	41.00bbde
Montreal	165.00ag	181.00au	325.00au	230.00	248.00e	.....	39.50	46.00	34.80	22.00	13.75u
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	140.95h	150.30h	206.70ch	225.50hn	.....	.....	37.00	.....	36.00	32.00	.....
Philadelphia	145.30	155.00	290.60	348.70	.....	.....	30/34	35/42	25.00	23.00	2.97
Pittsburgh	118.00	126.00	192.00	224.00	286.00	328.00	36.00	46.00y	25.00	23.00	2.97m
St. Louis	142.00cc	160.00cc	319.00cc	465.00cc	439.00	621.50	40.00sl	36.00s	.90aaa	.75aaa	1.25acepss
San Francisco	156.85a*	177.10a*	235.30ddz*	.....	.....	.....	37.00	.....	26.60	26.60	2.65m
Seattle	228.00ee	230.00ee	.....	240.00eew	.....	.....	34.00s	49.00s	42.00sAA	37.50	3.90mAA

† F.o.b. yard Roxbury. a Smooth. b Per 50 lb. bags. c 6 x 12 x 12 in.-3 cell. d Pulverized hot. e 5%, 10th following month. g 5½ x 8 x 12. h F.o.b. trucks, job site N.Y.C. j Truck load or over. k $1.00 discount l Red face. m Per bbl., 180 lb. n 7½ x 7½ x 12. Speed title. p Truck lots. q Provincial and Municipal tax extra. r Not used because of earthquake danger. s 2% discount for cash. t 5½ x 8 x 11¼. u Tax exempt. v Sand lime. w 5 x 8 x 12. y Stacked. z Pebble lime price per 80 lb. sack. aa Price per sack. Lime not sold per ton. bb LCL. cc Truck delivery. dd 6 x 12 x 12. ee Pebble lime. ff 80% common. gg Select. hh LCL. § F.o.b. yard. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 500-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases in oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$15.25	$28.275	$3.26	$3.51	$3.01	$2.74	$3.01	$2.98	$0.405	$39.75
Baltimore	15.00	27.90	2.75	4.25	3.35	2.66	4.43	4.43	.47	45.56
Birmingham	15.25	28.275	3.90	3.40	....	2.93	2.93	2.93	....	42.00ee
Boston	15.00	27.90	....	....	....	2.98ag	3.03ag	3.03ag	.42g	48.50g
Chicago	15.00	27.90	....	..	...	3.20‡u	3.29‡o	3.29‡o	38.00‡bbr	48.00‡
Cincinnati	15.00	27.90	....	....	....	2.66	2.735	2.735	.48y	47.86
Cleveland	15.00	27.90	2.32pgg	2.60gg	2.61gg	2.97q	2.66o	2.66o	.43y	40.70kk
Dallas	15.25	28.65	....	4.05	....	3.50q	3.75o	4.35o	.36	58.50kk
Denver	15.50	28.40	3.29	5.15	3.04	2.66	2.61o	2.61o	.43ff	47.00
Detroit	15.00	27.90	2.35	3.25	2.50	2.97	2.66f	2.66	.53	44.00
Kansas City	15.00	28.65	....	2.71ys	2.65	3.40	3.20o	3.20o	.43	53.05
Los Angeles	15.00	28.15	3.30*	4.50*	4.20*	2.63*	1.70**	l	.58*	l
Minneapolis	15.00	29.88/28.02	....	....	....	2.74idd	2.50hidd	2.50hidd	.44idd	42.00r
Montreal	.....	20.95	2.95ff	4.05ff	3.25ff	4.00t	3.65tf	1.06‡t	.....	3.30‡t
New York	15.00	27.90	....	....	....	2.79e	2.50e%	2.50e%	.44e%	42.00e
Philadelphia	15.00	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	15.00cf	27.90	2.65	2.85	3.15	2.95	3.00e	3.00e	.35	45.00
St. Louis	15.00	27.90	....	....	....	2.79	2.50h	2.50h	.42y	43.00
San Francisco	15.00	28.15	2.40	.....	3.40	2.95	4.00aa	.....	.49	.....
Seattle	15.00	28.40	3.07m	2.93m	....	3.58mqee	3.05kmee		59mee	52.00m*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. a Red lead prices change frequently due to pig lead price changes. b U. S. War Dept. Spec. 3-49A. c ASTM Spec. D266-31. d 80% minimum ferric oxide. e 15 lb. f Per 432 sq. ft. g F.o.b. yard, Roxbury. h Per roll. 65 lb. i Net carload lot prices; Minneapolis and vicinity. k Per cwt. l Not used. m 1% discount for cash. n F.o.b. city. o Per 60-lb. p 6-drum, 50 gal. ea. q Per 90-lb. roll. r F.o.b. factory, Chicago. s 466 Med. t Federal tax included. u Per 90 lb. square. v Per ton. w Price to large paint contractors is $1.25 less. x Mineral surfaced. y 55-gallon container. z Drums. aa Approximate cost per 100 lbs. bb Roofers coating and cement; Price per ton. cc LCL, truck delivery. dd 2% cash discount. ee Asphalt pitch in 100 lb. package. ff 5-gal. drums. gg F.o.b. factory. hh Incl. freight. D. Std Black. E. Ready-mixed. F. Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drum. @ Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Brick-layers	Car-penters	Struct. Iron Workers	Hoisting Engineers	Plas-terers	Electrical Workers	Steam-fitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$3.10	$2.50	$2.75	$2.50	$2.90	$2.75	$2.90	$1.28	$1.28
Baltimore	3.20d	2.75	3.275i	3.10/3.25	3.075i	2.975	2.975i	1.675i	1.675i
Birmingham	3.15	2.40	2.925b	2.245	2.82	2.875	2.875b	1.30	1.40
Boston	3.185e	2.75	3.15i	3.20	3.20f	3.13R	3.10d	1.99e	1.99e
Chicago	3.40k	3.15e	3.20m	3.00m	3.525e	3.37f	3.24e	2.35b	2.35b
Cincinnati	3.225	2.925	2.99b	2.75/3.00	3.10	3.12N	3.175b	2.02	2.02
Cleveland	3.25i	3.20d	3.20i	3.20	3.20	3.20	3.20e	2.45	2.45
Dallas	3.50	2.625	2.75	2.75	3.437	2.90	2.90	1.40	1.40
Denver	3.50	2.775	2.75	2.705	3.30	3.00	2.97	1.80	1.80
Detroit	3.33e	3.08e	3.23e	3.23e	3.32i	3.22R	3.15b	2.28e	2.28e
Kansas City	3.025	2.675	2.805	2.64/2.885	3.25	2.987e	3.075b	1.98	1.98
Los Angeles	3.285@	2.70	2.925b	2.87	3.437S	3.10	3.225e	2.05	2.05
Minneapolis	3.125	2.70	2.82	2.65	2.90e	3.20n	2.875	1.95	1.95
New Orleans	3.05	2.42	2.80e	2.60	2.625	2.925b	2.75e	1.375	1.375
New York	3.874hr	3.87U	3.975e	3.84f	4.154	3.63aaP	3.815bL	2.415P	2.415P
Philadelphia	3.62i	3.10	3.51iM	2.875/3.625	3.55i*	3.55e	3.515e	1.875	2.175
Pittsburgh	3.475h	3.20h	3.475h	3.325h	3.30h	3.35	3.00	2.025h	2.025h
St. Louis	3.62e	2.975h	3.025h	3.05	3.25h	3.28e	3.05R	2.005h	2.005h
San Francisco	3.475hk	2.905h	3.075h	2.66	3.45eh	3.225U	3.275K	2.075h	2.075h
Seattle	3.40d	2.75d	2.95d	2.78	3.25d	2.925	2.95T	2.25	2.35d
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	1.90	1.25	1.25

* Cost of living bonus now included in basic wage. # Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. b 7 hr. day. c Incl. 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. d Incl. 10¢ H&WF. e Incl. 6¢ H&WF. f Incl. 6% WF. g Incl. 11½¢ WF. h $2.625 homes & housing plus 7½¢ WF. i Incl. 12¢ WF and 15¢ PF. j Incl. 10½¢/hr.WF. k Incl. 7½¢/hr. WF. l Incl. 4% VF. m Incl. 5¢/hr WF. n Incl. 20¢ H, W, Ins., Vac. & Retirement. o Incl. 10¢ PF, 8¢ WF. p Incl. 3% WF, 3% PF. r Incl. 3½% WF and 20¢ PF. s Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. t Incl. 7½¢ H&WF. u Incl. 1½% WF. v Incl. 10¢ WF. w Negotiating. x Incl. 8¢ WF. y Incl. 22½¢ WF. z Incl. 7½¢ IF, 5¢ H&WF. A Incl. 15¢ WF, 15¢ PF & 20¢ B.F. B Incl. 3% WF. C Incl. 2½¢ H&WF. D Plus 5% WF, plus travel pay per day. E Plus $4/per day Annuity contrib. G Incl. 11¢ H & WF. H Incl. 7¢ WF. I Incl. 15¢ H&WF. J Incl. 5% WF, 6PH. K Incl. 10¢ H&WF 10¢ VF, 2½% PF. L Incl. 3% WF, 3% PF, 2% VF, 1% EF. M Incl. 7½¢ PF. N Incl 1% WF O Incl 2% WF, 1% PF. P Incl. 5% WF, 6 PH. R Incl. 12¢ WF and 1¢ apprentice. S Incl. 12½¢ H and WF. T Incl. 21¢ H, W & VF. U Incl 7½¢ WF, 4% VF, 1% PF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Jan. '54	Feb. '54
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.00	1.00
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.00	1.00
Skilled Labor Wages			
Carpenters (8 hr. day) 1 el.	av. per hr.	2.25	2.25
Bricklayers (8 hr. day) 1 el.	av. per hr.	2.25	2.25
Struct. Iron Workers (8 hr. day) ....Remachadores.	av. per hr.	1.13*	1.13*
Struct. Steel Shapes 3"–18" x 12 meters	per metric ton	1224.23	1224.23
Reinf. Steel, Corr. Rods ½" x 11 meters	per ton	1200.00	1200.00
⅝" x 11 meters	per ton	1200.00	1200.00
¾" x 11 meters	per ton	1200.00	1200.00
⅞" x 11 meters	per ton	1200.00	1200.00
1" x 11 meters	per ton	1200.00	1200.00
Gravel truck load of 3½ cu. meters Blue Gravel	per tr. load	60.00	60.00
Rose Gravel	per tr. load	55.00	55.00
Cement, Std. Port. (Tolteca)	per ton	180.00	180.00
Lumber Mex. Sacred Fir (OYAMEL)	per M ft.	850.00	850.00
1st Class Pine	per M ft.	1300.00	1300.00
2nd Class Pine	per M ft.	1200.00	1200.00

* 1st & 2nd fl. add 40% ea. addn'l floor over preceding one

ENR Skilled Average: ($3.100 **ENR Common Average:** $1.944.

Contractor Saves 30¢ a Yard on 17-story Hospital Job

. . . It was done with Pumpcrete®

Using Rex Pumpcrete, *the pump that delivers concrete by pipeline,* the contractors for the $11 million Mayo Medical Center, on the University of Minnesota campus in Minneapolis, saved 30¢ per cubic yard in placing concrete.

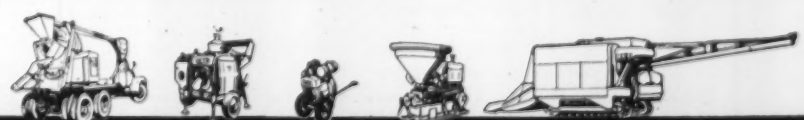
Two Rex Pumpcretes, with a concrete crew of eight, placed a floor a week—working right through the winter without losing a day. The Pumpcretes delivered *all* of the concrete for floors and columns for this seventeen story structure.

At the completion of the job, the twin six-inch pipe ran a total of 550 feet from the ground level mixing plant and had pumped concrete up 176 feet above the ground. Shortly after completing this job, both Pumpcretes were at new building sites, again keeping concrete placement costs low.

Over-all view of hospital with lower floors completed and concrete being placed on upper stories. Flexibility of this setup permitted spanning 250 feet between wings of building, easily . . . at low cost, saving erection of still another tower, as would have been the case using buggy method of concrete placement.

When you Pump Concrete . . . costs come down

If you're interested in seeing other types of jobs on which Rex Pumpcrete has cut the cost of concrete placement, we will be happy to send you copies of "It Was Done with Pumpcrete." There may be helpful data you can use to cut costs on your jobs. See your Rex Distributor or write Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.



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Only Clay Pipe is completely unaffected by these 16 common industrial acids

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CHLORACETIC ACID
FORMIC ACID
CARBOLIC ACID
NITRIC ACID
HYDROBROMIC ACID
LACTIC ACID
HYDROCHLORIC ACID (any conc.)
NITROUS ACID
OLEIC ACID
SULFUROUS ACID
OXALIC ACID
PHOSPHORIC ACID
PICKLING ACID
SULFURIC ACID (any conc.)
TANNIC ACID

Take any section of Vitrified Clay Pipe into a testing laboratory. Soak it in these corrosive industrial acids—any mixture or any concentration. "Cook" the pipe in boiling acid. Immerse it in aqua regia. Run a stream of acid through the pipe for weeks or months or years. Even before the tests begin, you know the results: *Clay Pipe is completely unaffected by acids and other corrosive elements!*

These powerful acids can't weaken Clay Pipe . . . can't make it soft or spongy . . . can't even dull the glaze of its rock-hard interior surface. So you know that corrosive liquids and gases commonly found in sewage can never harm the Clay Pipe you install. Only Vitrified Clay Pipe assures this permanent protection against corrosion. Clay Pipe is guaranteed for 50 years. The next time you specify, buy, or install sewer pipe, be sure you get Vitrified Clay Pipe. It's chemically inert, and it *never wears out!*

NATIONAL CLAY PIPE MANUFACTURERS, INC.
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311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
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206 Connally Bldg., Atlanta 3, Ga.

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C-954-1

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **Conn., Hartford**—HOME—B.A. 3/10—Hebrew Home for the Aged, Inc., 276 Washington St., home, Tower Ave. and Coventry St., $1,000,000. Kane & Fairchild, 734 Asylum Ave., archts. CD 1/5.

Mass., Nantucket—SCHOOL—B.A. 3/19—Town, Cyrus Pierce School, Atlantic Ave., Regional High School, $450,000. Plans deposit $50 refundable, Tallman & LaBrode & Rounseville, 222 Union St., New Bedford, archts. CD 12/1/52.

Me., Caribou—HOSPITAL—B.A. 3/26—Cary Memorial Hospital, 3 Bridge St., hospital addn., Bridge St. $400,000. Plans deposit $50 refundable. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., archts. CD 4/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **Morrison-Knudsen Co., Inc. and Landers & Griffin, Inc.**, 122 E. 42 St., New York, N. Y., CA, $9,769,086. Lot 1;

Robert A. Verrier Constr. Co., 65 Commercial St., Portland, Me., CA $876,268, Lot 2 taxiways, aprons and aircraft refueling sys., Portsmouth Air Force Base, ENG-19-016-54-35, PORTSMOUTH, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Jan. 29. CD 2/3, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Brunalli Constr. Co., Main St., Southington, Conn. CA $1,319,328, est. $1,260,000. F 185 (4) Contr. A, hy. and bridge, Buckland and Charlemont. CD 2/1, under LB.

▲ † **Wes Julian Constr. Corp.**, 850 Providence Hy., Dedham, Mass. LB $3,886,917, airfield pavements, utilities Hanscom Air Force Base, Eng. 19-016-54-25, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 19. CD 1/19.

Bagley-Mucci, Inc., 6 Dexter St., Medford, Mass. LB $293,293, est. $300,000. constr. bathhouse, pavilion and parking house, SALISBURY, MASS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Feb. 16. CD 2/1.

BUILDINGS

LOW BIDS AND CONTRACTS

† **M. I. O'Connor**, 696 Bridge Rd., Northampton, Mass. CA $617,000. Item 1 Alt. B KITCHEN and DINING HALL No. 5 addns., alterations, Veterans Hospital, NORTHAMPTON, MASS. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Jan. 19, awarded Feb. 17. CD 1/25, under LB.

MIDDLE ATLANTIC

BID ASKED—HEAVY CONSTRUCTION

New York—TUNNEL SIDEWALK, CURB ALTERATIONS—B.A. 3/11—At office Dir. Purchase of The Port of New York Auth., 111 8th Ave., New York, Zone 11, furnishing all labor, material, equipment necessary for sidewalk, curb alterations, southwest corner of Vestry and Varick Sts., Holland Tunnel, Contr. O. & M 216, Prop. No. 385. CD 1/18, under New York-New Jersey.

N. J., Newark—PASSENGER TERMINAL ALTERATIONS—B.A. 3/16—The Port of New York Auth., Howard S. Cullman, chn., 111 Eighth Ave., New York 11, N. Y., miscellaneous alterations, Passenger Terminal Newark Airport, Contract NA-170.059. Plans deposit $10. CD 1/18.

BIDS ASKED—BUILDINGS

N. Y., New York—LIBRARY—B.A. 3/10—Dpt. P. Wks., Municipal Bldg., Zone 7, Contr. 1, general constr.; Contr. 2, plumbing; Contr. 3, heating and ventilating; Contr. 4, electrical work for constr. of Fordham Regional and Children's Branch Library, Library Addn., at Bainbridge and Marion Aves., Bronx Boro. Plans deposit $50. CD 1/21/44.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

L. G. DeFelice & Son, Inc. & C. J. Langenfelder & Son, Inc., Nettleton Ave., North Haven, Conn., LB $11,234,568, est. $12,394,000, 6.53 mi. Acc., 7.61 mi. Acc. New York State Thruway-Hudson Sect.-Subd. 10 (Tuckahoe Rd.-Tarrytown); New England Interch. Ramps P. Q. J, and K; eight misc. sec. roads; Ardsley Village SH 1053 and Ardsley-Elmsford, Pt. 1, -SH 18, Cont. H.T. 53-11, S.T. 53-34, R.C. 53-122, Westchester Co. Bids Feb. 18. CD 5/10/51.

Nels Contg. Co., 1407 Bassett Ave., Bronx, N. Y., LB $177,000. playground adjacent to P.S. 35, Martha St. to Foote Ave. west of Serpentine Rd., Richmond Boro., Contr. No. R-69-153B, NEW YORK. Comr. Parks, at Office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 1, N. Y. Bids Feb. 17. CD 2/8.

Ralph Tomasetti Constr. Co., 1763 58 St., Brooklyn 19, N. Y., LB $412,443, storm relief sewers 82nd St. from 17 to 14 Aves., BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N. Y. Bids Feb. 9. CD 2/1.

† **Allen Bros., Inc.**, Eggertsville, N. Y., LB $118,596, warehouse, FY 1953, Niagara Falls Air Force Base, NIAGARA FALLS, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Feb. 9. CD 1/6.

Capital Eng Co. Inc., 4619 Brandywine St. N.W., Wash., D. C., LB. $128,734, steel I-beam highway bridge and single track railroad bridge X 58 ft. 6 in. long crossing Watts Branch on west side of Kenilworth Ave., incl. temporary roadway approaches, WASH., D. C. D. C. Govt. Dpt. Hys., 499 Pa. Ave. NW, Wash., D. C. Bids Feb 16. CD 1/29

BUILDINGS

LOW BIDS AND CONTRACTS

† **Somers Constr. Co.**, Bala Cynwyd, Pa., CA $617,617. TB-NP conversion, BUILDING 57, Veterans Admin. Hospital, COATESVILLE, PA. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Jan. 26, awarded Feb. 17. CD 2/1.

William R. Hores, Coral Hills, Md. CA Est. $425,000. 35 brick detached HOMES, INDIAN HEAD, MD. Green Meadows Corp., Indian Head, Md. Herbert J. Korzendorfer, 7924 Wisconsin Ave., Bethesda, Md., archt. Awarded Feb. 15.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Va., South Boston—B.A. 3/9—Town, Town Hall, Prop. No. 1, Proj. No. 11, trunk sewer line along Reedy Creek, Prop. No. 2, Proj. No. III, sewer line in N. Main St. Plans deposit $25. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, engrs. CD 9/23/52.

† **Va., Portsmouth**—B.A. 3/9—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, retaining walls, material storage arm at Norfolk Naval Shipyard, NOY 81520, Spec. 40510. Plans deposit $10.

† **S. C., Charleston**—MESS BLDG.—B.A. 3/17—Dpt. Navy, P. Wks. Office, Naval Base, Charleston, Yard craft mess bldg., Charleston Naval Shipyard, NOY 82138. Plans deposit $10. CD 6/25/52.

† **Fla., Cocoa**—ELECTRICAL DISTRIBUTION—B.A. On Or About 4/1—U. S. Eng., P.O. Box 4970 Jacksonville, electrical distr. FY-52 utilities (Phase 1) Air Force Missile Test Center, Patrick Air Force Base, Serial No. Eng-08-123-54-43.

SOON LETS CONTRACT—BUILDINGS

Kentucky—POWER PLANT—Eastern Kentucky Electric Co-operative, Winchester, soon lets contract 60,000 kw. power plant addn., at Ford Plant on Kentucky River. CD 12/16/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Farnsworth & Chambers Co.**, Inc., 3018 Leeland St., Houston, Tex., CA $8,949,310, est. $10,561,110. power plant for Old Hickory Dam on Cumberland River, final phase of proj., 380 ft. x 166 ft., contain 25,000 kw generating units, TENNESSEE. U. S. Eng., 103 Federal Office Bldg., Nashville 1, Tenn. Bids Jan. 21, awarded Feb. 17. CD 1/26, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Tarrelton Homes, Inc.**, 7606 Halprin Dr., Norfolk, Va. Owner Builds. Approx. $1,000,000 112 one story frame RESIDENCES, NORFOLK, VA.

Leo Whalen, 129 E. Ninth St., Newport, Ky. Own Forces. $510,000. 53 frame HOUSES, Buttermilk Pk., Kenton Co., SOUTH FORT MITCHELL (BR. COVINGTON), KY. Edward Augustus, 317 Wallace Ave., Louisville, Ky., engr.-archt. Awarded Feb. 13.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ill., Morris—B.A. 3/24—City, City Hall, sewerage treatment plant, $350,000. Baxter & Woodman, 122 N. Williams St., Crystal Lake, engrs. CD 11/11.

† **O., Columbus**—NATIONAL GUARD FACILITIES—B.A. On Or About 3/25—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., constr. Air National Guard Facilities, Lockbourne Air Force Base, Franklin Co., about 10 mi. southeast of here, Serial No. ENG-46-022-54-14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Paschen Contractors, Inc.**, 2739 Elston St., Chicago, Ill., CA, $295,372, Contract 5A; LB, $289,008, Contract 5B;

Santucci Constr. Co., 5035 Church St., Skokie, Ill., CA, $387,755, Contract 6;

Falcon Marine Co., c/o owner, CA, $262,625, Contract 6A;

H. W. Hunter, Plymouth, Ind., CA, $109,305, Contract 7;

Independent Concrete Pipe Corp., 2050 S. Harding St., Indianapolis, Ind., CA, $266,940, Contract P5;

Sollitt Constr. Co., Inc., 301 Columbia St., South Bend, Ind., CA, $5,587,044, Contract 11, sewage treatment plant and interceptor sewers, SOUTH BEND, IND. Bd. P. Wks., City Hall, South Bend, Ind. Grand total $6,909,041. Bids Jan. 28, awarded Feb. 6.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Springfield,

McDougal & Hartman Co., 1500 N. Adams St., Peoria, Ill. LB, $117,411, substructure and erecting structural steel and paved approaches for viaduct on U.S. 24, Fulton Co.;

C. J. Mortiz, Inc., Register Bldg., Effingham, Ill., LB, $79,948, widening 4 existing and 1 rein.-con. slab superstructure for an existing bridge, Ill. 15, Edwards Co.;

Wm. E. Schweitzer & Co., 2207 Dodge Ave., Evanston, Ill., LB, $478,603, grade separation on Paulina St. over Congress St. Expressway (F.A. 131), incl. paved approaches, Cook Co.;

Mantz & Oren, Inc., 109½ Banker St., Effingham, Ill., LB, $349,601, widening, reconstr. 1 bridge and paved approaches on Ill. 15, Wayne Co.;

Vincennes Steel Corp., Vincennes, Ind., LB, $76,785, furnish structural steel for widen and reconstr of bridge on Ill. 15, Wayne Co. Bids Feb. 17. CD 2/8.

▲ **ILLINOIS**—State Dpt. P. Wks. & Buildings, Div. Hys., Springfield,

Black Top Roads Co., 1929 N. Naragansett St., Chicago, 39, Ill., LB, $86,948, bit resurf. 6.9 mi. Ill. 53, Du Page Co.;

Gunther Constr. Co., 600 E. Main St., Galesburg, Ill., LB, $94,777, c. conc. base course wid'n., conc. 0.11 mi. U.S. 150, Galesburg, Knox Co.;

Hedges Constr. Co., 100 N. La Salle St., Chicago, Ill., LB, $297,987, c. conc. base course wid'n. 5.03 mi. U.S. 24, Iroquois Co.;

Jefferson Asphalt Co., 1209 Casey St., Mt. Vernon, Ill., LB, $173,325, bit. resurf. 7.7 mi. Ill 130, Edwards Co.;

McCarthy Improv. Co., 601-3 Kahn Bldg., Davenport, Ia., LB, $178,706, bit. resurf. 9.05 mi. U.S. 150, Henry Co.;

McDougal & Hartmann Co., 1500 N. Adams St., Peoria, Ill., LB, $1,283,940, c. conc. 3.82 mi. U.S. 24, Peoria Co.;

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

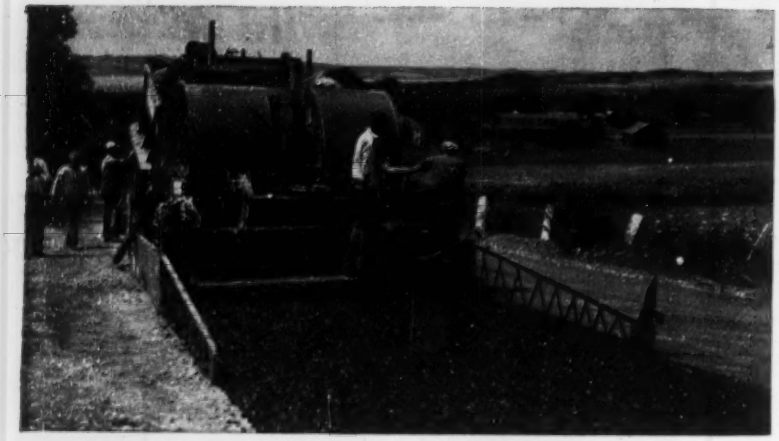
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily



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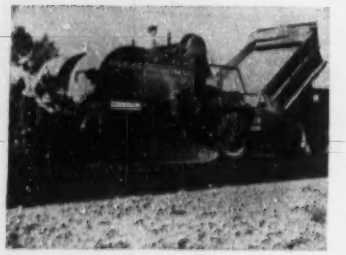

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The *Moto-Paver* makes road dollars go further, and do a better job, in less time. Especially on resurfacing and new construction on secondary roads and city streets. With the *Moto-Paver* a uniform, high quality bituminous mat is mixed and laid in one continuous operation. A smooth, waveless surface is produced, even when resurfacing over rough, irregular pavement. *No other machine or method produces comparable results at comparable costs.*

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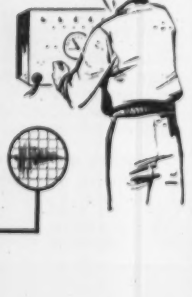

Sub-Surface

SEISMOGRAPH CORP.

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Powers Thompson Constr. Co., 27 S. Chicago St., Joliet, Ill., LB, $595,000, c. conc. base course wid'n. 0.53 mi. and c. conc. 1.7 mi., 1 rein.-con. deck girder superstructure, Ill. 4A, Will Co.;

Quad City Constr Co., 644 25 Ave., Rock Island, Ill., LB, $363,378, c. conc. base course 1.84 mi., c. conc. base course wid'n. 7.19 mi. U.S. 150, Henry Co.;

Regenhardt Constr. Co., P.O. Box 443, Cape Girardeau, Mo., LB, $678,000, c. conc. base course 3.37 mi. and c. conc. base course wid'n. 4.05 mi. double box culvert and wid'n. 1 bridge, Ill. 30, Edwards Co.;

C. H. Rumberg, Fairfield, Ill., LB, $86,195, grav. or crushed stone surf. 4.45 mi. FAS 807 and 808, Wabash Co.;

Sankey Bros., Inc., 402 Illinois Bldg., Springfield, Ill., LB, $129,972, bit. resurf. 3.12 mi. U.S. 66, Sangamon Co.;

Sweborg Constr. Co., P.O. Box 1122, Knoxville Rd., Galesburg, Ill., LB, $146,808, c. conc. paving 0.37 mi. and 1 bridge, U.S. 67, Warren Co.;

Trompeter Constr. Co., 2428 4 St., Peru, Ill., LB, $90,054, c. conc. 0.07 mi. and bit. surf. 0.69 mi. U.S. 51, La Salle Co. Bids Feb. 17. CD 2/8.

† **U. S. Eng.**, 420 Locust St., St. Louis, 2, Mo. cancelled bids to have been opened Feb. 24, pressure relief wells and collector system East St. Louis and vicinity Illinois (East Side Levee and Sanitary District) Proj. Item VA (2) Madison and St. Clair Counties, CIVENG 23-065-54-78, ILLINOIS. CD 1/29.

▲ **S. A. Healy Co.**, 20 N. Wacker Drive, Chicago, 6, Ill., LB, $3,349,729, West Side Subway from Chicago River to Des Plaines St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Feb. 16. CD 2/3.

Owen Ames Kimball Co., Inc., 38 Pearl St., N.W., Grand Rapids, Mich. CA $107,895. sewage plant alterations, incl. meter vault, pumping station and tank fdns., piping, discharge connection, screens, GRAND RAPIDS, MICH. City, Grand Rapids, Mich. Bids Feb. 3. CD 1/21.

BUILDINGS

LOW BIDS AND CONTRACTS

The Arcose Co., 4997 Glenway Ave., Cincinnati, O. Owner Builds. $690,000. 41 one-family, 24x36 ft. brick bsmnt. HOMES, Faywood Ave., CINCINNATI, O. Joseph Allen, 4638 Glenway Ave., Cincinnati, O. engr. Awarded Feb. 15.

Harry J. Lehman, Jr., 4600 Montgomery Rd., Cincinnati, O. Owner Builds. $450,000. 30 one-family brick HOMES, Ronda Ave., CINCINNATI, O.

▲ **Precision Housing Corp.**, 9720 Ridgewood Dr., Cleveland 29, O. Owner Builds. $3,000,000. 175 cedar or redwood exteriors HOMES, Nelwood and Springwood Rds., PARMA HEIGHTS, O.

▲† **Patterson-Emerson-Comstock, Inc.**, 313 E. Carson St., Pittsburgh, Pa., CA $2,480,000 electrical substation;

George Sheaf & Co., 449 Neilston St., Columbus, O., CA $1,791,179, recirculating water sys.;

C. W. Davis & Son, Inc., Huntington, W. Va., CA $787,600, distr. sys. for a PROCESS BLDG. (Subcontractors under Peter Kiewit Sons' Co., P.O. Box 268, Portsmouth, O.) for Atomic Energy Comn., 1901 Constitution Ave., N. W. Wash. 25, D. C., PIKETON and WAKEFIELD, O. Grand total $5,058,779. CD 8/13/52.

B. C. D. Real Estate Co., 3730 Prairie St., Brookfield, Ill., Own Forces, $800,000, 60 HOMES, BENSENVILLE, IND.

Showalter Constr. Co., 3734 S. Cuyler Ave., Own Forces, $325,000, 20 HOMES, in BERWYN and BROOKFIELD, ILL.

A. F. Krall Constr. Co., Decatur, Ill., CA, 1 story, 78x154 ft., stone, masonry, concrete steel CHURCH, CENTRALIA, ILL. First Christian Church, Rev. James K. Hempstead, pastor, 205 S. Elm St., Centralia, Ill. Bids Feb. 13. CD 1/26.

Erik A. Borg, 6449 Ridge Rd. Chicago, Ill., CA, $774,800 Junior High SCHOOL, GLEN ELLYN, ILL. School District No. 41, Duane Ave., Glen Ellyn, Ill. Awarded Feb. 15. CD 1/26, under LB.

G. H. Sternberg & Co., 1609 Delmar Ind St., Granite City, Ill., CA, 1 story, 67x263 ft., brick, steel, concrete WAREHOUSE, GRANITE CITY, ILL. Tri-City Grocery Co. 1603 State St., Granite City, Ill. Bids Jan. 28. Raymond E. Martiz, Chemical Bldg., 721 Olive St. St. Louis 1, Mo., archt.

Vader Van Slyke, 9424 W. Prairie Rd., Evanston, Ill., Own Forces, $800,000, 50 HOMES, in SKOKIE, GLENVIEW and NORTHBROOK, ILL.

North-Moller Co., 401 N. Jackson St., Jackson, Mich. CA Est. $500,000. 2 story, brick, steel high SCHOOL addn., ANN ARBOR, MICH. St. Thomas the Apostle Parish, Ann Arbor, Mich. Bids Jan. 8. CD 1/7.

Wermuth, Inc., 1036 St. Marys St., Fort Wayne, Ind. CA Est. $700,000. 2 story, bsmnt., 127x202 ft., brick STORE Southwest Capital, East Fountains, Riverside and East Rittenhouse, BATTLE CREEK, MICH. Sears Roebuck & Co., Russell F. Sweezey, mgr., Battle Creek, Mich. Dittrich & Gibson, 3 S. Michigan St., Chicago, Ill., archts. CD 12/10, under LB.

Granger Brothers, 2702 S. Cedar St., Lansing, Mich. CA $316,000. brick, steel Fairview Elementary SCHOOL, LANSING, MICH. City, Bd. Educ., Lansing, Mich. Bids Feb. 8. CD 2/3.

▲ **Peter Masi**, 7109 Rosedale St., Allen Park, Mich. Owner Builds. $3,600,000. 300 brick, frame RANCH HOMES on 80x135 ft. sites, Crescent View subdivision, Reeck Rd. north of Goddard, ALLEN PARK, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Iowa—B.A. 3/9—Soil Conservation Service, 434 Plankington Ave., Milwaukee, Wis., flood protection works on East Aldrich Creek, near Battle Creek, Ida Co. R3-130-54.

▲ Mo., St. Louis—AIRPORT BOILER and SHOPS—B.A. 3/9—City, Bd. P. Service, Frank J. McDevitt, pres., 304 City Hall, Zone 3, Part 2, boiler and shops, airline service bldg., cargo bldg., 3-passenger fingers for terminal bldg., Lambert-St. Louis Municipal Airport, $1,800,000. Hellmuth, Yamasaki & Leinweber Inc., 825 Locust St., St. Louis, Zone 1, archts. Wm. C. E. Becker, Ambassador Bldg., 411 N. 7 St., St. Louis, Zone 1, engrs. CD 1/29/44.

† N. M., Alamogordo—STORM DRAINAGE, etc.—B.A. 3/12—U. S. Eng., Box 1538, Albuquerque, addnl. storm drainage and dust control, incl. 85,000 sq. yd. site grading, 12- to 42-in. storm drain lines, drainage ditches, pavement repairing and new pavement, Holloman Air Force Base. Serial No. Eng-29-005-54-74. $100,000-$350,000. CD 2/11.

† Tex., Abilene—ROADS—B.A. 3/12—U. S. Eng., 100 W. Vickery St., Fort Worth, grading, drainage and roads, Abilene Air Force Base, Inv. No. Eng-41-443-54-43. $150,000-$400,000. CD 12/10/52.

† Arkansas—B.A. 3/23—U. S. Eng., P.O. Box 97, Memphis 1, Tenn., levee repairs in Lower St. Francis Levee District, Lee Co., incl. embankment slop dressing, addnl. compaction, fertilizing, sodding Levee Item No. R 692 R, Levee Stations, 186/0-191/0, Bledsoe, CIVENG-40-041-54-84.

BIDS ASKED—BUILDINGS

▲† N. M., Los Alamos—HOUSING—B.A. 3/15—U. S. Atomic Energy Comn., c/o Ch. of Procurement Sec., Los Alamos Field Office, Los Alamos, A. E. C. Group 16, housing, constr. 122 single, 2, 3, and 4-bedroom housing units, 1 story, wood frame, poured concrete fdns., constr. some bit. paving. Inv. No. 291-54-10. $1,000,000. Extended date. CD 1/13.

SOON LETS CONTRACT—BUILDINGS

Tex., Houston—OFFICE—United States Fidelity & Guarantee Co., Calvert and Redwood Sts., Baltimore, Md., soon lets contract 2 story, bsmnt., steel, brick and marble exterior office. $300,000. Mattingly & McKim, 5002 Caroline St., Zone 4, archts. H. E. Bovay, Jr., M. Esperson Bldg., engr. CD 11/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† MINNESOTA—Forest Service, Dpt. Agriculture, 623 N. Second St., Milwaukee, Wis.:

E. Rajala, Cohasset, Minn. CA $118,133. grav. 3.92 mi. road and 3 span 100 ft. bridge, Forest Service Development Proj. Ely-Buyck Forest Rd. No. 197, in Superior National Forest, 20 mi. northeast of Orr, St. Louis Co. Bids Nov. 9.

Platte Valley Constr. Co., Grand Island, Neb. CA $159,785. Sect. 1, constr. Judicial Ditch No. 1A of Nicollet and Sibley Counties, 1,479,578 cu. yd. excav., ST. PETER, MINN. Nicollet Co., H. Overn, aud., St. Peter, and Sibley Co., W. C. Oldensburg, aud., Gaylord, Minn. Bids Sept. 18.

St. Louis County Bridge & Grading Co., 7929 Alabama Ave., St. Louis 11, Mo. LB $244,017, est. $258,000. gravity discharge sewer from Pumping Station No. 1 River des Peres foul water sewerage sys., ST. LOUIS, MO. City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., St. Louis 3, Mo. Bids Feb. 16. CD 1/26.

TEXAS—State Hy. Comn., Austin,

Frost Constr. Co., Hydro, Okla., LB $571,935, 1.595 mi. Canadian River Bridge and approaches, Hy. St. 70, Roberts Co. Bids Feb. 16. CD 1/25.

▲ TEXAS—State Hy. Comn., Austin,

Adams Bros., P.O. Box 271, Kaufman, Tex., LB $77,419. grading, structures, base, surf. 3.996 mi. Hy. FM 780, Proj. S 1940 (1), Ellis Co.;

Austin Road Co., P.O. Box 1590, Dallas, Tex., LB $589,155, c. conc. asph. 6.002 mi. Hy. SH 35, Proj. F 351 (5), F 442 (6), Brazoria Co.;

Bryan & Hoffman, P.O. Box 390, Plainview, Tex., LB $137,764, grading, structures, base, surf. 11.536 mi. Hy. FM 658, 2042 and 2103, Proj. S 1938 (1), etc., Hall and Childress Counties;

Cage Bros., 6559 N. San Pedro St., San Antonio, Tex. LB $146,610, wid'n., b. conc. resurf. 8.13 mi. Hy. US 90, Proj. C 29-3-23, Caldwell Co.; LB $273,040, hot mix b. conc. 26.934 mi. Hy. US 84 and 87, Proj. C 53-9-10, etc., Scurry, Mitchell and Howard Counties;

J. M. Dillinger, Inc., P.O. Box 4227, Corpus Christi, Tex. LB $493,639. flexible base and b. conc. 17.639 mi. Hy. US 77, Proj. F 1100 (1), San Patricio and Refugio Counties;

J. R. Fanning, P.O. Box 1278, Lubbock, Tex., LB $86,692, foundation course and hot mix b. conc. 1.015 mi. Hy. US 287, Proj. F 533 (10), Childress Co.;

Fred Hall & Son, Valley Mills, Tex., LB $399,544. flexible base and two course surf. tr. 7.661 mi. Hy. US 77, Proj. F 331 (4), Falls Co.;

Olene Hanson, 4906 Griggs Rd., Houston, Tex., LB $116,529. grading, structures, base and surf. 6.31 mi. Hy. FM 1887, Proj. C 1745-1-2, Waller Co.;

J. A. Long & L. K. Long, Fox Bldg., McKinney, Tex., LB $84,317. grading, structures, base and surf. 5.213 mi. Hy. FM 2071, Proj. S 1636 (1), Cooke Co.;

McKown & Sons, P.O. Box 785, Austin, Tex., LB $148,696, flexible base, and asph. paving 2.347 mi. Hy. US 81 and 183, Proj. F 4 (11), etc., Travis Co.;

J. C. McLaughlin, 1305 E. 29 St., Bryan, Tex., LB $129,017, grading, structures, base 1.966 mi. Hy. SH 11, Proj. S 1539 (3), etc., Hopkins Co.;

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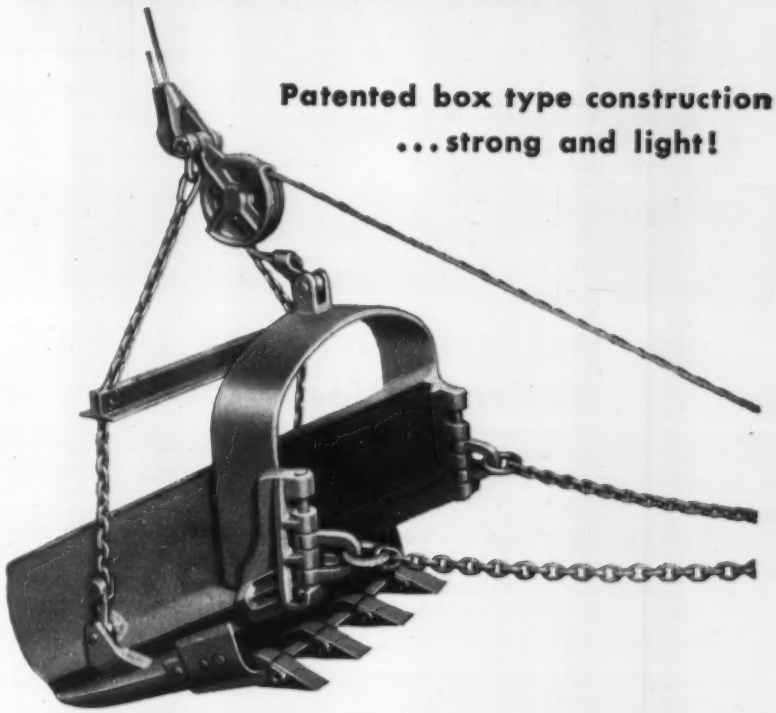

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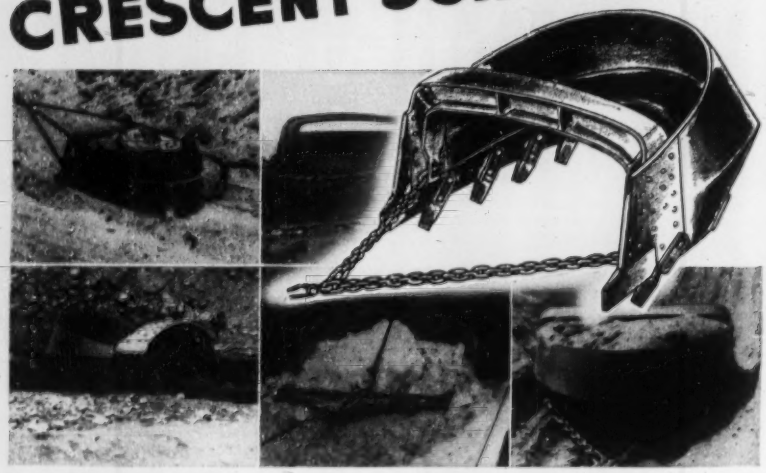

dig, haul and place more yardage *faster—at lower cost!*

Reduce difficult dig-haul-piling jobs to a simple, single operation with a Sauerman Crescent Scraper. Sizes range from 1/3 to 15 cu. yds. to cover the needs of material handling jobs . . . large or small.

The Crescent, with rugged toothed-blade, penetrates the toughest material with plowshare ease. The unique bottomless scraper gathers a full load on the forward pull and hauls at ground level to the discharge point for an instantaneous, clean dump. A single operator situated in a safe location overlooking the work area, automatically controls all the digging, hauling and dumping operations.

Sauerman Scrapers are low in first cost, simple and economical to maintain. Engineered to combine sturdy construction and wear-resistant lightweight metals, the Sauerman Crescent Scraper gives you small power consumption—diesel, gasoline or electric—compared to tonnages handled. Scrapers installed more than twenty-five years ago are still giving dependable service with a minimum of maintenance.

Write today for Catalog J for full information about the Crescent Scraper. Sauerman Bros., Inc., 532 S. Clinton St., Chicago 7, Ill.

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The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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Hugh McMillan, P.O. Box 1227, El Paso, Tex., LB **$68,207,** asph. 7.348 mi. Hy. US 80, Proj. C 1-2-15, El Paso Co.;

L. W. Pelphrey Co., P.O. Box 1166, Gladewater, Tex., LB **$80,665,** grading, structures, base and surf. 5.579 mi. Hy. FM 127 and 556, Proj. S 641 (2) and S 841 (2), Titus and Upshur Counties;

T. E. Sanderford, P.O. Box 58, Belton, Tex., LB **$76,716.** grading, structures, base, surf. 6.944 mi. Hy. FM 1602, Proj. R 774-5-2, Hamilton Co.;

Henry Stafford, P.O. Box 1047, Lubbock, Tex., LB **$81,310.** grading, structures, base, surf. 10.26 mi. Hy. FM 1622, Proj. S 1791 (1), etc., Yoakum Co.;

C. Hunter Strain, P.O. Box 1057, San Angelo, Tex., LB **$143,573,** seal coat Hy. US 80, etc., Proj. C 3-8-25, etc., Reeves, Ward, Crane, Ector, Terrell, Winkler and Upton Counties. Bids Feb. 16. CD 1/25, 1/27, 2/2, 2/5.

Kansas City Bridge Co., 205 Pioneer Bldg., Lake Charles, La., CA **$670,750,** bulkhead, GALVESTON, TEX. Galveston Wharves, 2404 Mechanic St., Galveston, Tex. Bids Feb. 10. CD 2/19, under Unclassified.

BUILDINGS

LOW BIDS AND CONTRACTS

E. A. Brunson Constr. Co., 4052 Forest Park Blvd., St. Louis 8, Mo. CA Est. **$343,000.** general contract 2 story, ground floor, 56x96 ft. rubble stone, cut stone, brick, steel, masonry CHILDREN'S BLDG., Hanley Rd. at Davis Dr., CLAYTON, (ST. LOUIS S P.O.) MO. Central Presbyterian Church, 801 S. Hanley Rd., Clayton 5, Mo. Jamieson, Spear!, Hammond & Grolock, 1696 Arcade Bldg., St. Louis 1, Mo., archts. Bids Jan. 29.

▲ **Westlake Constr. Co.,** 1919 Railway Exchange Bldg., St. Louis 1, Mo. CA Est. **$3,000,000.** 4 story, bsmnt., brick, concrete DEPARTMENT STORE for use by Famous-Barr Co. to be part of Northland Shopping Center West Florrissant Ave., Lucas and Hunt Rds., and vicinity, JENNINGS (ST. LOUIS 20 P.O.), MO. Northland Shopping Center, Inc., G. J. Nooney, pres., Sheil Bldg., and May Department Stores Co., Morton D. May, pres., c/o Famous-Barr Co., 601 Olive St., St. Louis 1, Mo. CD 7/15/52.

Metcalf Constr. Co., 105 S. LaSalle St., Chicago, Ill. CA Est. **$300,000.** nine 86x83 ft. and 133 ft. high rein.-con., GRAIN STORAGE BINS, steel open 21x71 ft. truck dump shed, 11 E. Grand Ave., ST. LOUIS, MO. Norris Grain Co., 500 Merchants Bldg., St. Louis 2, Mo. A. L. R. Sanders, 53 W. Jackson Blvd., Chicago 4, Ill., archt.

▲ **Johnson-Batcher Co.,** Salina, Kan. CA Aprox. **$2,000,000.** GRAIN STORAGE ELEVATOR, HASTINGS, NEB. Morrison-Quirk Grain Corp., Audubon, Ia. CD 11/18.

Beltbilt Corp., c/o H. L. Phillips, Almeda-Genoa Rds., Houston, Tex. Owner Builds. **$365,000,** 22 brick DWELLINGGS, concrete slab fdn.; **$345,500,** 15 masonry rambling type dwellings, HOUSTON, TEX. CD 1/27.

Embe Development Co., 101 Bearle St., Houston, Tex. Owner Builds. **$318,500,** 24 frame, masonry DWELLINGS, concrete slab fdn., PASADENA, TEX. CD 5/25.

Trinity University, 715 Stadium Dr., San Antonio, Tex., rejected bids Jan. 12, 2 story masonry women's DORMITORY, SAN ANTONIO, TEX. Est. **$350,000.** CD 2/11.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ † **Wash., Spokane**—HOSPITAL—B.A. 3/16—U. S. Eng. 4735 E. Marginal Way, Seattle, Zone 4, 3 story, rein.-con. hospital, Fairchild Air Force Base, Inv. 54-123. $3,500,000. Plans deposit $50. CD 2/18.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Guthrie Constr. Co.,** N 2918 Nevada St. Spokane, Wash., Day Labor, **$3,500,000,** 300 HOUSES, KENNEWICK, WASH. CD 12/18.

▲ **J. W. Lenney,** 11001 Woodbury Rd., Garden Grove, Calif. Owner Builds, CA, **$1,000,000,** 100 stucco DWELLINGS, NORTH LONG BEACH, CALIF. Hugh Gibbs, 441 E. First St., Long Beach, Calif., archt.

▲ **Robert E. McKee, Inc.,** 4700 San Fernando Rd. West, Los Angeles, Calif. LB, **$1,271,000,** 2 story, steel, brick MUSIC BLDG., LOS ANGELES, CALIF. University of California, 405 Hilgard Ave. Los Angeles, Calif. Bids Jan. 16. CD 1/8.

▲ **Len Constr. Co., Inc.,** 8320 West Third St. Los Angeles, Calif., LB, **$1,087,700,** Imperial Court Low-Rent HOUSING, LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, Calif. Bids Feb. 16. CD 12/23.

Pacific Electric Mfg. Corp., 5815 3 St., San Francisco, Calif., CA, **$429,750,** furnishing switchgear and structural equip. for Duplex SUB-STATION, SACRAMENTO, CALIF. Sacramento Municipal Utility District, 59 and R Sts., Sacramento, Calif. Awarded Feb. 1. CD 7/8/48, under Public Buildings.

▲ **Trepte Constr. Co.,** 2001 Ketner Blvd., San Diego, Calif., CA, **$1,000,000,** 6 story steel OFFICE addn., SAN DIEGO, CALIF. Marston Co., 5 Ave. and S Sts., San Diego, Calif. Samuel Hamill, Scripps Bldg., San Diego, Calif., archt.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont, Toronto—TRANSIT SHED—B.A. 3/8—Toronto Harbor Comn., Harbor St., superstructure for transit shed on Queen's Quay, east of Yonge St. $800,000. Plans deposit $50. Marani & Morris, 1250 Bay St., archts.

SOON LETS CONTRACTS—BUILDINGS

▲ **Ont., Toronto**—WAREHOUSE—Drummond McCall & Co., 373 Front St. E., soon lets contract 1 story, 200x500 ft., concrete block, brick, steel distr. warehouse on 17-acre site near Barker Airport. $1,500,000. Margison & Babcock, 119 Isabella St., Toronto, Ont., engrs. CD 8/27.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Quaker Oats Ltd.**, 14 Hunter St., Peterborough, Ont., Owner Builds, $1,000,000, remodeling MILLS, PETERBOROUGH, ONT.

S. Seibel & Wm. Engle, c/o M. Skair, archt., 165 Spadina Ave., Toronto, Ont. Owner Builds. $550,000. APARTMENT, 80-82 Charles St. E., TORONTO, ONT.

Redmont Constr. Co. Ltd., 211 Eglinton Ave. W. Toronto, Ont. Owner Builds. $500,000, concrete, steel, brick APARTMENT BLOCK, Yonge St., TORONTO, ONT. E. I. Richmond, 455 Spadina Ave., Toronto, Ont., archt.

Colonial Housing Co. Ltd., 6901 E. Sherbrooke St., Montreal, Que. Owner Builds. $650,000. 80 concrete, brick COTTAGES near Daris St., MONTREAL, QUE.

▲ **P. W. Graham & Sons Ltd.**, Moose Jaw, Sask., CA, $1,554,378. HOSPITAL addn., MOOSE JAW, SASK. General Hospital Bd., Moose Jaw, Sask. H. K. Black, Black Bldg., Regina, Sask., archt. CD 8/27/48.

Proposed Projects

WATER SUPPLY

▲ **Ill., Chicago**—Dpt. Water Works, City Hall, expanding water distr. facilities to suburban towns, $7,351,000: Chicago Ave. Pumping Station rehabilitation, $235,000. CD 1/30/51.

▲ **Ill., Jacksonville**—City, c/o Mayor J. Hoaglund, City Hall, WW sys. imprvs., incl. Plan No. 1, dam on Indian Creek n.e. of city; Alternate Plan 2, piping water 24 mi. from Illinois River via 24 in. concrete line, $3,500,000. Casler & Stapleton, 313 W. State St., consult engrs. CD 11/29/46.

▲ **N. D., Fargo**—City, water sys., imprvs., exten. $1,575,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Calif., San Jose**—Santa Clara Sanitary District No. 3, Court House, $1,075,000 bond election Mar. 16, sanitary sewerage sys. Mark E. Thomas & Co., 18 North San Pedro, consult. engrs.

▲ **Ga., Macon**—City, City Hall, sewage treatment plant $1,900,000. Wiedeman & Singleton, P. O. Box 1878, Atlanta, consult. engrs. CD 3/30.

▲ **Mo., St. Louis County**—St. Louis County, c/o Luman P. Matthess, co. superv., Court House, Zone 5, voted $1,000,000 bonds, sanitary refuse disposal landfills. CD 8/14/44.

BRIDGES

▲ **O., Cincinnati**—City, City Hall, cancelled construction elimination of grade crossing at Mitchell and Clifton Aves. and B. & O. R.R. $4,000,000. CD 5/6.

STREETS AND ROADS

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis.

Allen and Macon Counties—imprv., relocating U.S. 27 between Fort Wayne and Decatur. $4,000,000. Shaffer-Parrett & Assoc., Mansfield, O., consult. engrs.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Boston-Dorchester — Southeast Expressway connection Southampton St. to Neposet Circle, multiple lane limited access, divided expressway from southerly end of interchange with Central Artery southerly 3.7 mi. to connection with Southeast Expressway. $10,000,000. Edwards, Kelcey & Beck, 165 Congress St., Boston, consult. engrs.

▲ **Mich., Oak Park**—City, Louise Shaw, clk., 13600 Oak Park Blvd., b. conc. paving various roads, incl. Wyoming, Oak, Park Blvd., wid'n. Coolidge between 8 and 9 Mile Rds., 20 to 44 ft. $1,500,000. Robert J. McNutt, city engr.

▲ **Mo., St. Louis County**—St. Louis County, c/o Luman P. Matthews, co. superv., Court House, Zone 5, defeated $32,124,000 bonds, hys. and expressways in various parts of county. CD 9/18.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.

Montgomery Co.—13 mi. arterial route sys: imprv. Rte N. Y. 30 and new road to north city line; East-West Rd. on Main St. and Division St.; realignment of Church St. and relocating Rte. N. Y. 55, Amsterdam. $6,576,000.

▲ **OHIO**—Ohio Turnpike Commn., 139 E. Gay St., Columbus, Zone 15, have received proposals from J. E. Greiner Co., 1201 St. Paul St., Baltimore, Md., Howard, Needles, Tammen & Bergendoff, 1805 Grand Ave., Kansas City, Mo. and Charles E. DeLeuw, 150 N. Wacker Dr., Chicago 6, Ill., all consulting engineers, to prepare detailed plans for North-South Turnpike, to link Toledo, Columbus, Cleveland and Akron areas with Cincinnati-Conneaut Hy. Total cost $400,000,000. CD 8/11.

BRIEFS from The YEOMANS GUARD

"The Big Ditch" Gets Big Order of Yeomans Wet Pit Centrifugal Pumps

Here is part of a recent shipment of 77 Yeomans vertical wet pit centrifugals for use as chain fender and cross under drainage sump pumps at the Panama Canal locks.

Outstanding features of the pumps are the relatively high heads (up to 126 ft.); small capacities (as low as 50 g.p.m.); and speed limitations of 1450, the maximum possible with the 25-cycle motors specified.

These single-stage pumps, with their large diameter impellers but fairly small water passages, were selected rather than multi-stage centrifugals or gear head motors operating at high speeds—either of which would have increased the cost without giving any better performance.

* *

"PACKEX" It's new, pneumatic, low-capacity, high-efficiency, self-contained . . .

So many of our "Expelsor" pneumatic ejector customers have asked for a similar but lower capacity unit . . . that we went ahead and developed one. Called the "PACKEX", it has all the best features of the "Expelsor" . . . plus several even better features of its own.

It's a self-contained "package"—needs only a 4½ ft. diameter circle of floor space; has its own air compressor, mounted on top; has a nominal capacity rating of 20 g.p.m. at 20 Ft. head . . . and is agreeably low in price.

If small quantities of solids-bearing liquids are causing you big headaches, we suggest you check the box below.

☐ Please send new "PACKEX" Bulletin.

Do you have a *continuous* process that depends upon pumps?

If you have a problem-material to pump as part of your process and yet must have absolute freedom from clogging and resulting down-time . . . it will pay you to investigate Yeomans pumps.

What happened to certain tomato canners "Before Yeomans" shouldn't happen again (and won't) . . . and it shouldn't happen to you either!

A Yeomans pump's job in a tomato cannery is to handle wastes—dirt, vines, skins, cores, and damaged fruit accumulated from washing, sorting and peeling.

There's one omnipotent factor in the cannery business—Old Lady Nature. She calls the crop-time. Canning season is five to nine weeks. Every lost hour means spoilage, loss of that off-the-vine flavor, punishing cuts in profit.

In the past, pumps of positive displacement type were generally used for waste handling. Result: frequent breakdowns of clogged pumps—time consuming, exasperating, costly.

Harassed beyond endurance by disastrous pump failures, several tomato canneries switched to the Yeomans "Skip-Pit" Pump—a vertical wet pit pump designed to handle wastes containing grit and abrasive materials—and peace settled down upon the industry.

How about *you*? Do you have one of those "continuous processes" that is continuous only until a pump breaks down? If you have, it's time to invest a 3-cent stamp and get in touch with Yeomans. We specialize in pumps that pump when they're supposed to pump. You simply install 'em . . . and forget 'em.

☐ Please send Wet Pit Pump Bulletin 3-8001.

YEOMANS BROTHERS COMPANY

1999-1 N. RUBY STREET, MELROSE PARK, ILLINOIS

Manufacturers of: Centrifugal Pumps and Pneumatic Ejectors for Buildings, Municipalities, and Industrial Applications, and a Full Line of Waste Treatment Equipment

HOW TO HANDLE WET JOBS

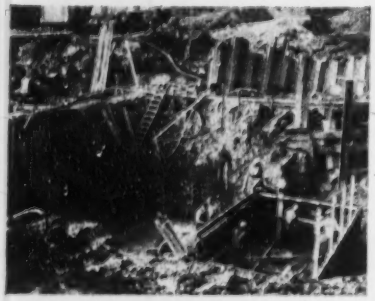
#25 of a series

SEWAGE TREATMENT PLANT

Valparaiso, Indiana

Contractor: C & C Construction Co.

BOTTOM UNSTABLE due to quicksand below subgrade. Photo shows collapse of steel sheet piling in this deep excavation for a Lift Station.



WELLPOINT SYSTEM—in new nearby site — solves problem perfectly as water is lowered the required 21 ft and digging speeds ahead by economical open-cut method.

THE soil mixture — clay, silt and fine sand — didn't make life any easier for the Griffin engineers, especially since subgrade, as noted, contained gravel and sand under artesian pressure. The results indicate efficiency of the planning and installation of system.

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Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

EARTHWORK, WATERWAYS

▲ **Tex., Andrews**—Fullerton Oil Co. & Associated Companies, Andrews, gas injection pressure-maintenance program, Clearfork zone of Fullerton field. $1,000,000.

AIRPORTS

▲ **Ind., Terre Haute**—AIRPORT IMPRVS.—State of Indiana National Guard, Adj. Gen. H. A. Doherty, State House, Indianapolis, airport imprvs., one 2,000 ft. and one 7,000 ft. runway extensions, one 6,000 ft. taxistrip 52,000 sq. ft. hangar, parking apron, rein.-con. storage bldg., shops, $2,600,000.

▲† **N. M., Albuquerque**—WEAPONS CENTER—Headquarters Air Research & Development Command, Baltimore 3, Md., plans by Flatow & Moore, archts.-engrs., 1840 Lomas Blvd. N.E., master plan for Air Force Special Weapons Center, Kirtland Air Force Base.

▲† **Wash., Moses Lake**—HANGARS, etc.—Boeing Airplane Co., 7755 E. Marginal Way, Seattle, Zone 4, hangars, flight aprons, etc. for center to house B-52 jet bombers, for U. S. Air Force, Pentagon, Wash., D. C. $10,000,000.

PUBLIC BUILDINGS

▲ **Calif., Azusa**—SCHOOL—Citrus Union High School District, 18824 E. Foothill Blvd., voted $2,500,000 bonds, school construction. CD 1/27.

▲ **Calif., San Jose**—SCHOOLS—San Jose City Unified School District, 408 Almaden Ave., voted $7,500,000 bonds, schools and school addn. CD 12/2.

▲ **Calif., Walnut Creek**—HOMES—Ygnacio Valley Imprvt. Assn., c/o Wilson & Co., engrs., 1512 Franklin St., Oakland, 500 home subdivision on Wheeler Ranch, near here. $5,000,000.

▲ **Minn., Virginia**—HOSPITAL—City, J. G. Milroy Jr., clk., voted $1,500,000 bonds Feb. 2, municipal hospital addn. Damberg & Damberg, Virginia, archts. CD 1/19.

▲† **Mo., St. Louis**—OFFICE—General Services Admin., Pub. Bldgs. Service, 18 and F Sts. N.W., Wash., D. C., 1,200,000 sq. ft. federal office in block bounded by 12 bldg. Chestnut, Pine and 11 Sts. $19,800,000. No appropriation made.

▲ **Mo., St. Louis County**—COUNTY GOVERNMENTAL—St. Louis County, c/o Luman P. Matthews, co. superv., Court House, Zone 5, defeated $3,000,000 bonds, county governmental bldgs. CD 9/18.

▲ **N. Y., Scarsdale**—HIGH SCHOOL—Union Free School Dist. 6, Greenburgh, Westchester Co., Scarsdale, plans by Warren H. Ashley, 967 Farmington Ave., West Hartford, Conn., Edgemont Junior and Senior High School, Greenburgh. $1,500,000. CD 1/22/48.

▲ **O., Cincinnati**—SCHOOLS—Bd. Educ., 608 E. McMillan St., plans by A. M. Kinney, Inc., 2905 Vernon Pl., 2 story, bsmt., brick Washington Park Elementary School, 12th and Elm Sts., $2,000,000; Mt. Airy Elementary School, Colerain Ave., $700,000. CD 11/15/51.

▲ **Wis., Milwaukee**—HOUSING—Housing Authority of City of Milwaukee, 408 E. Wells St., plans by Grassold-Johnson & Assocs., 734 N. Jefferson St., Zone 2, exten. Housing Project Wisconsin 2-4, $5,-500,000. CD 6/4/51.

▲† **Cuba, Guantanamo Bay**—HOSPITAL—Officer in Charge of Constr., Bureau Yards and Docks Contracts, Tenth Naval Dist., San Juan, Puerto Rico, plans by Maurice H. Connell & Assocs., Inc., and Steward & Skinner, 200 Langford Bldg., Miami 32, Fla., 100-bed Naval Hospital, at U. S. Naval Base. $1,000,000.

▲ **Ont., Ottawa**—MEMORIAL BUILDINGS—Dpt. P. Wks., Govt. of Canada, Hunter Bldg., westerly sect. of Veterans Memorial Buildings, Wellington St. $1,800,000. E. A. Gardner, c/o owner, archt.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—RETAIL CENTER—C & C Development c/o Del E. Webb Constr. Co., S. 23 St., retail center, department store, 12 office units, 13 shops, $2,000,000.

▲ **Ariz., Phoenix**—RESIDENCE—John C. Hall, N. 38 St., 360 residences, $3,000,000.

▲ **Calif., Van Nuys**—DWELLINGS—Laurel Co., 5658 W. 3 St., Los Angeles, 200 frame, stucco dwellings in Van Nuys District. $2,000,000.

▲ **Ga., Pine Mountain Valley**—TEMPLE—The Hall of Our History, Inc., Palmer Bldg., Atlanta, Ga. Plans by Eric Gugler & Assocs., 101 Park Ave., New York, N. Y., granite temple. $15,000,000.

▲ **Ill., Waukegan**—SHOPPING CENTER—Russell A. Edwards & Co., 220 Washington St., shopping center, sewers, water lines, west of here. $2,000,000.

▲ **Mo., St. Louis**—LIBRARY—St. Louis University, Very Rev. Paul C. Reinert, S.J., pres., 221 N. Grand Blvd., Zone 3, plans by Lee A. Daly Co., Ambassador Bldg., 411 N. 7 St., St. Louis, Zone 1, and Alfred Morten Githens, architectural consult., 623 N. Columbus Ave., Mount Vernon, N. Y., 3, 4 and 5 story Pope Pius XII Memorial Library at 3661 W. Pine Blvd. (on university campus) $4,000,000-$5,000,000. CD 11/13.

▲ **Mo., St. Louis**—SCIENCE CENTER—Scientific Group Forming, c/o Howard C. Ohlendorf, 4100 Manchester Ave., Zone 10, science center, incl. planetarium, natural history museum, science and industry bldg., science auditorium in Forest Park south from city, $6,000,000.

▲ **Neb., Omaha**—SHOPPING CENTER—Richard L. Mark, Railway Exchange Bldg., Denver, Colo., plans by Jared Morse, 1050 Cherokee St., Denver, Colo., shopping center, 72nd and Dodge Sts. $3,500,000.

▲ **N. Y., Briarwood**—APARTMENT—Kalikow Constr. Corp., c/o Morris Rothstein & Son, archts., 186 Joralemon St., Brooklyn, Zone 2, 6 story apartment, Pershing Crescent, west of Landu St. $1,330,000.

▲ **N. Y., New York**—APARTMENT—Flagler Park Estates, Inc., 36 W. 44 St., Zone 19, plans by Emery Roth & Sons, 575 Madison Ave., Zone 22, apartment, 30 Park Ave. at 36 St. $2,000,000.

▲ **N. Y., New York**—STUDENT UNION, etc.—Fordham University, Fordham Rd., Student Union Bldg. $1,500,-000; Law School, $1,000,000; School of Business, $1,000,000; School of Education, $1,000,000; School of Social Service, 1,000,000; Classroom Bldg., $1,000,-000; Chemistry Bldg., $1,000,000; School of Pharmacy, $500,000; Library, $500,000; Co-operative Research Center, $500,000 on campus on Fordham Rd., Bronx Boro.

▲ **O., Brooklyn**—SUPERMARKET—Forest City Material Co., 5200 Brookpark Rd., Cleveland, Zone 29, 1 and 1½ story, approx. 90,000 sq. ft. masonry supermarket for building supplies and equipment, Brookpark Rd. $1,300,000.

▲ **O., Lyndhurst**—SHOPPING CENTER—Hilltop Realty, Inc., 5148 Mayfield Rd., Zone 24, plans by Weinberg & Teare, Citizens Bldg., Cleveland, Zone 15, 1 story, masonry shopping center to house 23 stores, Richmond and Mayfield Rds., parking for 550 autos $3,000,000.

▲ **Pa., Phila.**—OFFICE, etc.—Laigh M. Cohan, 121 Chestnut St., plans by Herman H. Kline, 34 S. 17 St., office bldg. and garage, 2nd and Chestnut Sts. $2,000,000.

▲ **Pa., Phila.**—SHOPPING CENTER—Penn Fruit Co., 1919 Chestnut St., shopping center, 58 to 62 Sts. on Woodland Ave. $2,500,000.

▲ **Pa., Phila.**—APARTMENTS—Syndicate, c/o Mayer I. Blum, 2601 Parkway, 6 multi-story apartments, with parking in basements, shopping center and residential development, outside parking, to be known as Gresheim Valley Park. $35,000,000.

▲ **Tex., Houston**—SHOPPING CENTERS—Leo F. Corrigan, Mercantile Bank Bldg., Dallas, plans by Print & Brooks, 1330 N. Industrial Blvd., Dallas, shopping center, Washington Ave., east of Shepherd Dr. intersection, $2,000,000; 150x175 ft. masonry shopping center, N. Shepherd Dr. at W. 38 St., near Roebuck Co., $2,500,000. CD 1/10/52.

▲ **Tex., Padre Island**—HOTEL—Mike Abraham, 9925 Carnegie Dr., Dallas, hotel, 15-acre site purchased on Padre Island facing the Gulf of Mexico, $3,500,000.

▲ **Tex., San Antonio**—STORE, etc.—Myron M. Behrman & Assocs., c/o Wolf & Marx, Houston and Main Sts., San Antonio, masonry suburban department store, $2,000,000; masonry suburban shopping center, to contain 50-store spaces, $4,000,000, 30-acre tract on Military Hy. between San Pedro Ave. and Blanco Rd.

INDUSTRIAL BUILDINGS

▲ **Kan., El Dorado**—REFORMER UNIT—Skelly Oil Co., Skelly bldg., Tulsa, Okla., 7,500 bbl. catalytic reformer unit, $1,750,000.

▲ **Kan., Topeka**—TRUCK TERMINAL—Robert Carr, 5010 Marietta St., truck terminal and service center, $3,000,000.

▲ **Ky., Louisville**—WAREHOUSE—The Kroger Co., Inc., 1100 Garland St., warehouse, Crittenden Dr. $1,-500,000.

▲ **La., New Orleans**—BREWERY—Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo., 1 million bbl. per year beer brewery on 150 acre tract across Mississippi River from city, $20,000,000.

▲ **Mass., Wayland**—LABORATORY—Raytheon Mfg. Co., Waltham, laboratory Jr., 73 acres, Rte. 20 and Sudbury Rd. $1,500,000. Cabot, Cabot & Forbes, 60 State St., Boston, consult. engrs.

▲ **Minn., St. Paul**—REFINERY—Great Northern Oil Co., W. J. Carthaus, pres., First National Bank Bldg., oil refinery on tract of 950 acres 6 mi. south of South St. Paul, will process crude oil from Fosterton field of Williston basin in Saskatchewan, $20,000,000.

▲ **N. D., Williston**—PLANT—H. L. Hunt & M. B. Rudman Co., Mercantile Bank Bldg., Dallas, Tex., natural gasoline (cycling) plant. $3,750,000.

▲ **O., Cincinnati**—PLANT—The Cincinnati Enquirer, Inc., 617 Vine St., 1 story, newspaper publishing plant on tract measuring 150x360 ft. Gilbert Ave. $3,500,000.

▲ **Tex., Sweetwater**—PLANT—Payne & Johnston and B. G. Byars, Kilgore and Tyler, cycling plant, near here. $1,350,000.

▲ **Utah, North Salt Lake City**—FACTORY, etc.—General Motors Corp., Electro Motive Div., LaGrange, Ill., 156x300 ft. factory, 50x66 ft. office. $1,500,000.

▲ **Wyo., Worland**—PLANT—Socony-Vacuum Oil Co., Inc., & Associated Companies, Worland, dehydrating and sweetening plan. $1,850,000.

UNCLASSIFIED

▲ **Mo., St. Louis County**—PARKS—St. Louis County, c/o Luman P. Matthews, co. superv., Court House, Zone 5, defeated $4,500,000 bonds, county county parks. CD 9/18.

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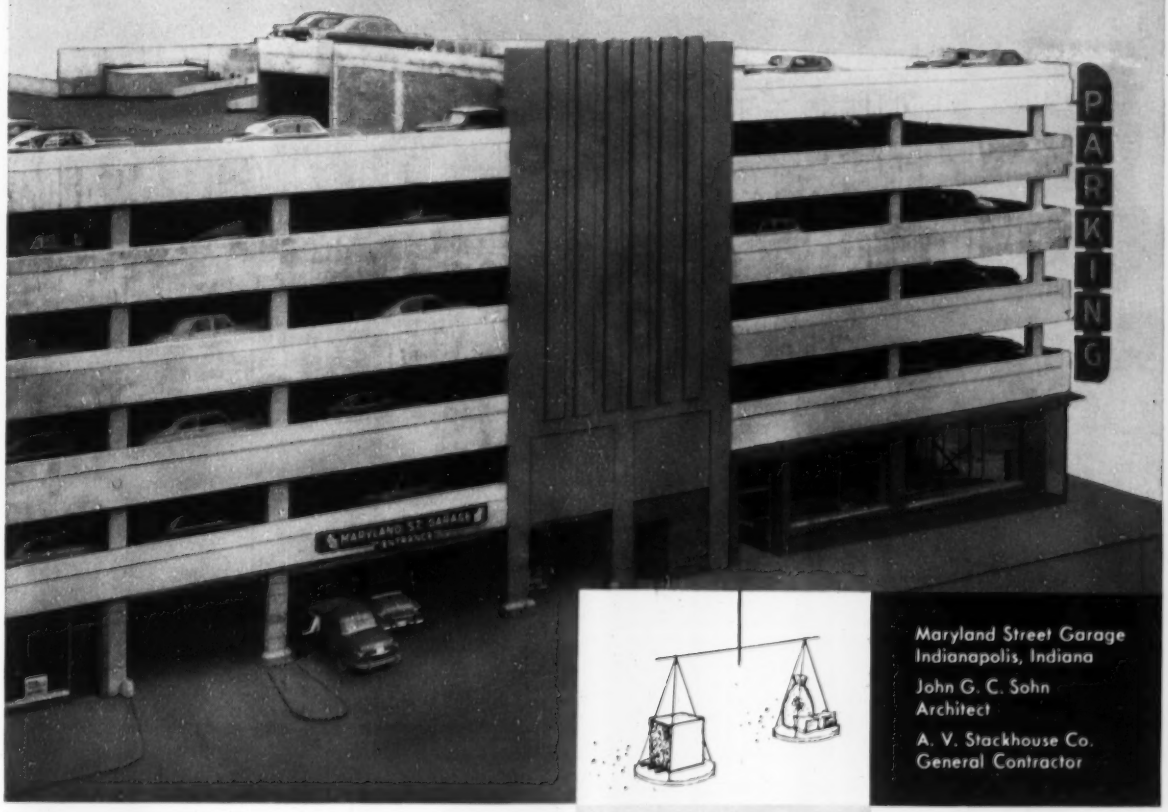

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Architect

A. V. Stackhouse Co.
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NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 9 Massachusetts
STREETS AND ROADS
March 9 Massachusetts

▲† N. H., Portsmouth—HANGAR—B.A. 3/19—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., 250x600 ft. structural steel cantilever hangar; rein.-con. reservoir, 61 ft. wide, 82 ft. long, 22 ft. deep, pumps piping, etc., Air Force Base, ENG-19-016-54-69 under $4,000,000 Plans deposit $15. Kuljian Corp., 1200 N. Broadway, Phila., Pa., engrs. CD 7/16/52.

BIDS ASKED—BUILDINGS

▲ Mass., Norwood—OFFICE—B.A. 3/9—At office Cram & Ferguson, archts., 248 Boylston St., Boston, (selected list bidders) office, Providence Turnpike, for Factory Mutual Laboratories, 1151 Providence Hy., Norwood, Mass. $2,500,000. CD 8/12.

▲ Mass., Stoneham—SCHOOL—B.A. 3/11—Town, R. C. Burdick, supt. Schools, Joel Whitemore, chn. Bldg. Comn., Central St., high school, Central St. $1,520,000. Plans deposit $50 refundable, Howard L. Rich & Herman F. Tucker, 45 Newbury St., Boston, archts. CD 7/27.

▲ R. I., Warwick—HIGH SCHOOL—B.A. 3/17—City, Supt. Schools, City Hall, high school, Oakland Beach Sect. $2,500,000. Plans deposit $150. MacConnell & Walker, 3308 Post Rd., archts. Bedford Lemieux & Della-Grotta, 1 Washington Ave., Providence, engrs. CD 8/26/52.

▲ Conn., Stamford—SCHOOL—B.A. 3/30—at office F. N. Benevelli, purch. agt., City Hall, Westover Elementary School, Stillwater Ave., for City Bd. Educ., 511 Broad St. $1,000,000 Extended date. William F. R. Ballard, 123 E. 77 St., New York 21, N. Y., archt. Fraipoli-Blum-Yasselman, 113 W. 42 St., New York, N. Y., structural engrs. CD 2/15.

SOON LETS CONTRACT—BUILDINGS

▲ Conn., New Haven—MEDICAL SCHOOL DORMITORY—Yale University, New Haven, soon lets contract medical school dormitory, $1,000,000. Douglas Orr, 111 Whitney Ave., archt. Gugler-Kimball & Husted, 101 Park Ave., New York, N. Y., archts. CD 2/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ John A. Volpe Constr. Co., 54 Eastern Ave., Malden, Mass. LB $1,012,254 RECREATIONAL BLDG., Dutton, Main and Buck Sts., BANGOR, ME. Bangor Recreation Center, R. N. Haskell, ch. Bd. Trustees, 33 State St., Bangor, Me. Bids Feb. 18. CD 1/13.

▲ Rollingwood Homes, c/o Ryder, Struppman & Neumann, archts., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds, $1,600,000, 97 HOMES on tract on St. Mary's Lane off West Rocks Rd., NORWALK, CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 16 Maryland
STREETS AND ROADS
March 9 Maryland March 11 New York
March 15 New Jersey

▲ † N. Y., Plattsburg—COLLEGE REHABILITATION—B.A. 5/27—U. S. Eng., 80 Lafayette St., New York, Zone 13, rehabilitation of Champlain College at Plattsburg Air Force Base, $1,000,000-$3,000,000. Reisner & Urban, 654 Madison Ave., New York, Zone 21, archts. CD 10/15/52.

BIDS ASKED—BUILDINGS

▲ N. Y., New York—COLLEGE OF MEDICINE—B.A. 3/26—Yeshiva University, 270 Park Ave., Zone 17, Contr. 2, superstructure for Albert Einstein College of Medicine of Yeshiva University. Total est. $10,000,000. Plans deposit $100. Kelly & Gruzen, 80 Fifth Ave., New York, Zone 11, archts. CD 8/14/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ S. S. Siberblatt, Inc., 25 W. 45 St., New York 19, N. Y. LB $3,959,100, Contr. 370.003, Hangar No. 8; Tufano Contr. Corp., 32-17 Lawrence St., Flushing, N. Y., LB $1,298,000, Contr. 370.002, paving and utilities for Hangar No. 8, at New York International Airport, IDLEWILD, N. Y. The Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Feb. 23. CD 1/18.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Mellon Stuart Co., 210 E. Park Way, Pittsburgh, Pa., CA. Approx. $1,250,000. 1 story, 400x500 ft. brick, block, steel WAREHOUSE and OFFICE, MURRAYSVILLE, PA. Thorofare Markets, Inc., Smellman St., Pittsburgh, Pa.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 9 Florida March 10 Virginia
March 12 Kentucky
STREETS AND ROADS
March 9 Florida March 10, 17 Virginia
March 12 Kentucky March 31 Louisiana

BIDS ASKED—BUILDINGS

▲ Va., Waynesboro—PLANT—B.A. 3/9—General Electric Co., River Rd., Schenectady 5, N. Y., rein.-con. frame, masonry Specialty Control Plant. $2,000,000. Whitman, Requardt & Assocs., 1304 St. Paul St., Baltimore, Md. engrs. CD 1/8.

▲ Va., Alexandria—HIGH SCHOOL—B.A. 3/17—City School Bd., 418 S. Washington St., 2 story masonry Alexandria High School. $2,000,000. Plans deposit $75. Robert A. Willgoos & Dwight D. Chase, 500 Montgomery St., archts. CD 9/9/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Fordice Constr. Co., Porter Bldg., Memphis, Tenn. LB $1,146,800. concrete mattress 122,000 squares, Delta, Inv. 54-91, LOUISIANA, U. S. Eng., foot of Prytania St., New Orleans, La. Bids Feb. 17. CD 2/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Jordan Contg. Co., Cussetta Rd., Columbus, Ga., CA, $1,282,011, SCHOOL projects, McDONOUGH, GA. Henry Co. Bd. Educ., McDonough, Ga. CD 2/16, under LB.

▲ F & R Builders, 66 S.W. 28 Road, Miami, Fla. Owner Builds, $1,750,000, 175 RESIDENCES, MIAMI, FLA.

▲† Tennessee—Tennessee Valley Auth., New Sprankle Bldg., Knoxville, awarded contracts for Wilson Dam, Ala., Gallatin Steam Plant, Tenn., Miscellaneous, Kingston Steam Plant, Tenn., John Sevier Steam Plant, Tenn. and Johnsonville Steam Plant, Ky. Grand total $3,961,623.

WILSON DAM, ALA.

Charles C. Steward Machine Co., 1236 N. Appalachee St., Birmingham, Ala., CA $213,018, gate hoists;

Link-Belt Co., 1116 Murphy Ave., S.W., Atlanta, Ga., CA $66,245, pan conveyors.

GALLATIN STEAM PLANT, TENN.

Custodis Constr. Co., Inc., 25 Broadway, New York, N. Y. CA $386,930, rein.-con. chimneys;

Ingalls Iron Works Co., Inc., 620 Fourth Ave. S., Birmingham, Ala., CA $1,708,951, steel;

MISCELLANEOUS

Jaques Sales & Service Co., Denison, Tex., CA $62,500, heavy duty hydraulically controlled hole diggers;

Babcock & Wilcox Co., Sterling Ave., Barberton, O., CA $66,158, pulverizer balls and rings;

Allis-Chalmers Mfg. Co., 1344 Hyde Park Ave., Hyde Park, Mass., CA $67,740, oil circuit breakers;

California Piling Corp., Willits, Calif., CA $87,891, treated wood poles.

KINGSTON STEAM PLANT, TENN.

Republic Flow Meters Co., 2240 W. Diversey St., Chicago, Ill., CA $117,273, control boards, control and metering equip.;

Brooks Fisher Insulating Co., 686 Greenwood Ave. N.E., Atlanta, Ga., CA $512,505, insulation; CA $367,595, installing insulation;

Combustion Eng., Inc., 1032 W. Main St., Chattanooga, Tenn., CA $51,885, steam generating units, supplementary award.

JOHN SEVIER STEAM PLANT, TENN.

Lambert Bros., Inc., Alcoa Hy. S.W., Knoxville, Tenn., CA $94,875, crushed stone;

Allen-Sherman-Hoff Co., Hamburg, Pa., CA $37,758, ash handling equip.;

Westinghouse Electric Corp., Union Bank Bldg., Pittsburgh, Pa., CA $102,599, auxiliary power switchboards, manufactured at several points;

JOHNSONVILLE STEAM PLANT, KY.

Chicago Bridge & Iron Co., Healey Bldg., Atlanta, Ga. CA $17,700, erection to exten. to steel stacks.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ Ill., Chicago—B.A. 3/18—City, City Hall, 2-level Wacker Drive between Adams and Monroe St. drainage and sewer work, $1,500,000. CD 7/29.

BIDS ASKED—BUILDINGS

▲ Ill., Chicago—APARTMENT—B.A. 3/15—New York Life Insurance Co., 51 Madison Ave., New York, N. Y. 119-unit apartment at Lake Meadows Project, 35 and Cottage Grove Ave. $2,000,000. Skidmore, Owings & Merrill, 100 W. Monroe St., Zone 3, archts. CD 8/18/49.

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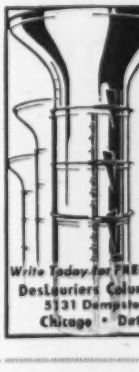

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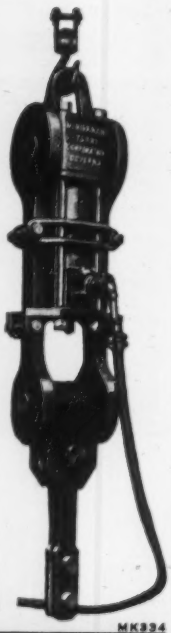

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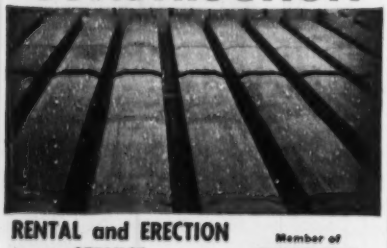

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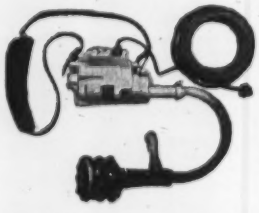

"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

SOON LETS CONTRACT—BUILDINGS

▲ Ill., Evanston—DORMITORIES—Northwestern University, 608 Clark St., soon lets contract two 4 story dormitories. $2,000,000. Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, archts. CD 10/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **American Incinerator Corp.,** 5710 E. Nevada St., Detroit, Mich. CA, **$2,000,000,** incinerator, Medill Ave. at Chicago River, CHICAGO, ILL. City, City Hall, Chicago, Ill. Awarded Feb. 16. Paul Gerhardt, City Hall, Chicago, Ill., city archt. CD 1/13, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Squires Home Builders,** 2166 Fairhill St., Cleveland, O. Own Forces. **$4,000,000.** 150 HOMES, SOUTH EUCLID, O.

▲ **Baldwin Builders, Inc.,** 6721 Calumet Ave., Hammond, Ind. Own Forces, **$2,000,000,** 200 HOMES in HAMMOND and DYER, IND.

▲ **Fruin-Colnon Contg. Co.,** 1706 Olive St., St. Louis 3, Mo., CA, **$3,000,000,** approx. 5 million bu. rein.-con. GRAIN ELEVATOR on Alton & Southern RR., near EAST ST. LOUIS, ILL. Cargill, Inc., C. M. Roberts, Jr., Southern Regional Mgr., Merchants Exchange Bldg., St. Louis 2, Mo. Mentor Addicks, c/o owner, ch. enrg. CD 11/23.

▲ **The Stewart Co.,** 228 S. La Salle St., Chicago, Ill., CA, **$1,250,000,** 1.5 million bu. GRAIN ELEVATOR addn., addnl. barge loading facilities, and building of a second automatic truck dump on 3.5 acre site adjoining existing elevator, on East St. Louis River front, EAST ST. LOUIS, ILL. Continental Grain Co., Harold H. Vogel, vice pres. and genl. mgr., Merchants Exchange, 3 and Pine Sts., St. Louis 2, Mo.

▲ **R. J. Bluett & Sons,** 7700 Touhy St., Skokie, Ill., Own Forces, **$1,000,000,** 90 HOMES in WHEELING, ILL.

▲ **The Austin Co.,** 510 N. Dearborn St., Chicago, Ill. CA Est. $1,500,000. design and construct ASSEMBLY PLANT, BENTON HARBOR, MICH. Clark Equipment Co., 6520 Cass St., Detroit 2, Mich.

▲ **Kelly Development Co.,** Naley Village, Fleming and West Stewart Rds., Flint, Mich. Owner Builds. $2,500,000. 230 single brick, frame HOUSES. Clio, Pierson, Fleming and West Stewart Rds., FLINT, MICH.

▲ **Prudential Investment Co.,** 1418 Cadillac Tower, Detroit, Mich. Owner Builds. $2,500,000. 300 frame HOMES, Auburn Rd. between Philip and Betty Rds., SHELBY, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

March 9 Iowa — March 12 Kansas, Minnesota
March 16 Kansas, Texas — March 17 Texas

STREETS AND ROADS

March 9 Iowa — March 11, 12 Kansas
March 12 Minnesota — March 16 Kansas, Texas
March 17 Texas — March 23 Iowa, Montana

BIDS ASKED—BUILDINGS

▲ Tex., San Antonio—HOSPITAL—B.A. 3/11—Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, 600-bed hospital, State Tuberculosis Hospital, Proj. No. Tex. 122. $2,750,000. Plans deposit $50. Extended Date. Phelps & DeWees & Simmons, 342 W. Woodlawn St., archts. Walter C. Moore, c/o owner, superv. archt. Matthews & Kenan, Transit Tower, Beretta, Greenslade Clark & Collins, Inc., 902 Travis Bldg., and G. M. Baker, 342 W. Woodlawn St., engrs. CD 2/4.

▲ Mo., St. Louis—HOSPITAL—B.A. 3/16—Jewish Hospital of St. Louis, 216 S. Kingshighway Blvd., brick, rein.-con., steel addns. to front and rear of present hospital from 1 story and ground floor to 6 story and ground floor. $4,000,000. Jamieson, Spearl, Hammond & Grolock, 1696 Arcade Bldg., 812 Olive St., Zone 1, archts. CD 6/12.

▲ Mo., St. Louis—HOUSING—B.A. 3/23—St. Louis Housing Auth., John J. O'Toole, exec. dir., 901 Washington Ave., Zone 1, Housing Proj. No. MO-1-7 Phase 1 consisting 660 dwelling units in four 9 story bldgs. on 16 acres in area bounded by Lafayette Ave., Hickory, 12 and 14 Sts., Approx. $10,000,000. Extended date. Hellmuth, Yamasaki & Leinweber, 825 Locust St., St. Louis, Zone 1, archts. CD 12/22.

▲ Colo., Denver—OFFICE—B.A. 3/24—Colorado State Highway Dept., 518 State Office Bldg. Denver, state hy. dept. bldg. 2,250,000. CD 1/10/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Steenberg Constr. Co., 1371 Marshall Ave., St. Paul 4, Minn., CA $2,032,877, hospital, Ellsworth Air Force Base, Inv. 25-066-54-27, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 4, CD 2/10, under LB.

▲ † Hagstrom Constr. Co., 1567 Selby Ave., St. Paul, Minn. CA $1,430,427, 76-bed hospital, Great Falls Air Force Base, GREAT FALLS, MONT. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Jan. 19. awarded Feb. 18. CD 1/27 under LB.

▲ † Robert E. McKee, General Contractor, Inc., Box 651, Albuquerque, N. M., LB $2,197,778, airfield pave-

ment. Kirtland Air Force Base, Inv. No. ENG-29-005-54-79, ALBUQUERQUE, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Feb. 16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Thompson & Son**, 5010 Gramar St., Wichita, Kan. Owner Builds. $3,000,000. HOUSING, WICHITA, KAN.

▲ **Schneider Constr. Co.**, Box 13157, Houston, Tex., LB $2,027,000, est. $1,750,000. 1 and 2 story, 159,000 sq. ft. masonry, consisting of 5 connecting bldgs., Foster Place Junior HIGH SCHOOL, Yellowstone and Scott Sts., HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Feb. 17. CD 1/20.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 17, 18, 25 California

SOON LETS CONTRACT—BUILDINGS

▲ **Calif., San Mateo**—SCHOOL—Roman Catholic Archbishop, 1100 Franklin St., San Francisco, Serra High School, 20 Ave. and Strathford Way $2,000,000. Vincent G. Raney, 233 Post St., San Francisco, archt.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ † **Winston Brothers Co.**, 1532 S. California Ave., Monrovia, Calif., LB, $3,385,433, San Antonio Dam, CIVENG-04-353-54-24, CALIFORNIA U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 19.

CANADA

BIDS ASKED—BUILDINGS

▲ **Alta., Edmonton**—B.A. 3/15—Imperial Oil Ltd., 56 Church St., Toronto, Ont., lubricating oil plant. $5,000,000. Extended date. R. W. Dunlop, c/o owner, engr. CD 1/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Harris Constr. Co. Ltd.**, 1350 Wall St., Winnipeg, Man., CA, $2,500,000, 10 story HOSPITAL addn., on south side of present bldg., on Wolsely Ave.; CA, $1,000,000, 6 story nurses home on north side of present building on Cornish Ave., WINNIPEG, MAN. Misericordia Hospital Bd., Cornish Ave., Winnipeg, Man. CD 4/17.

▲ **Sterling Constr. Co. Ltd.**, 2494 Sandwich St. E., Windsor, Ont., CA, $1,290,000, 500-man MESS and 180-man BARRACK BLOCKS, Nos. 2, 3 and 4, Wolsely Barracks, LONDON, ONT. Defence Constr. Co. Ltd., 49 Eglinton Ave. E., Toronto, Ont. Bids Jan. 10. CD 12/29.

▲ **Hillsdale Constr. Co., Ltd.**, 5950 Cote des Neiges Rd., Montreal, Que., Owner Builds, $1,900,000, 200 bungalows in HOUSING program on new streets, L'ABORD A PLOUFFE, QUE. E. Bujold, 6904 Molson St., Montreal, Que., archt.

▲ **Atlas Constr. Co. Ltd.**, 4781 W. Ste. Catherine St., Montreal, Que., CA, $1,648,753, est. $1,800,000, 30 m. g. reservoir, Atwater Ave., MONTREAL, QUE. Municipality, City Hall, Montreal, Que. Bids Feb. 16. CD 1/20.

▲ **Victoria Constr. Ltd.**, 4915 Isabella Ave., Montreal, Que. Owner Builds, Separate Contracts, $1,750,000. 75 COTTAGES, at Blvd., MONTREAL, QUE. CD 7/27/50.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **Peter Kiewit Sons Co.**, 1300 Aloha St., Seattle, Wash., LB $3,319,241, est. $3,154,000, road, street and sidewalk paving, ENG-95-507-54-4, Ladd Air Force Base, ALASKA. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 17. CD 2/3.

PUERTO RICO

BIDS ASKED—BUILDINGS

▲ **Puerto Rico, Hato Rey**—HOUSING—B.A. 3/18—Municipal Housing Auth. of the Capital of Puerto Rico, San Juan, constr. third phase of Nemesio Canales low-rent housing, PR 2-73, 262 dwelling units in 20 rein.-con. bldgs., incl. utilities, plus site imprvs. $2,000,000. CD 5/26/43.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Lock Joint Pipe Co. of U. S.**, 150 Rutledge Ave., East Orange, N. J., U.S.A. CA $5,413,000, supplying and laying water pipe line from Wemmers Hoek to Capetown, CAPETOWN, SOUTH AFRICA. City of Capetown, South Africa.

(Proposal Advertisements see pp. 79 and 80)

20 Water Main Taps Per Day
WITH ONE SHERMAN POWER DIGGER!

Because of the speed and ease with which trenches and holes can be dug by a Sherman Power Digger, Utility Installations Co. of Detroit has found a profitable sub-contracting business—digging to tap water mains and trenching for service lines into homes in new housing projects. Up to 20 bell holes for water main taps are dug by a single Sherman Power Digger in one working day. This performance is due to the easy handling of the all-hydraulic Sherman Power Digger—its flexibility, compactness and maneuverability. Combine these with Sherman's exclusive design features, simple maintenance and amazingly low initial cost . . . and you'll find that a Sherman Power Digger will fit into *your* operation profitably too! Write for free literature C-50.

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Milled slide holds 3 interchangeable scales:

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Convenience-engineered design permits immediate use of any scale without removing and reversing arc frame. *Controlled* motion of index arm makes easier and more accurate readings. *Internal* focus on bubble.

Overall length . . . 6½"
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Choice of any 3 scales, $30.00

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precision engineering instruments since 1907
LEUPOLD & STEVENS INSTRUMENTS, Inc.
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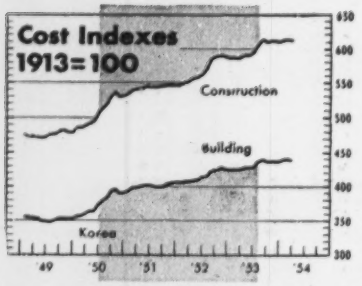
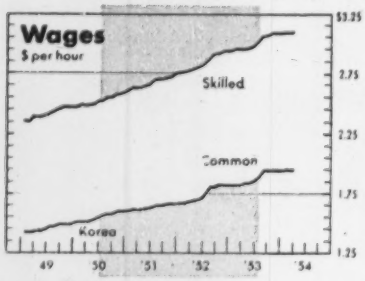
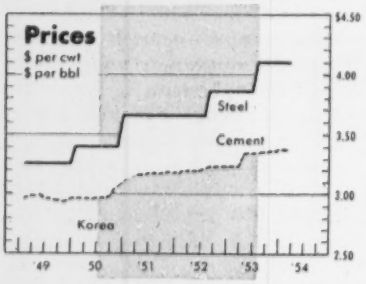
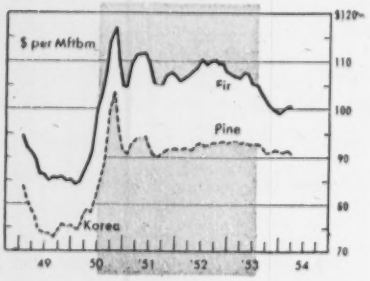
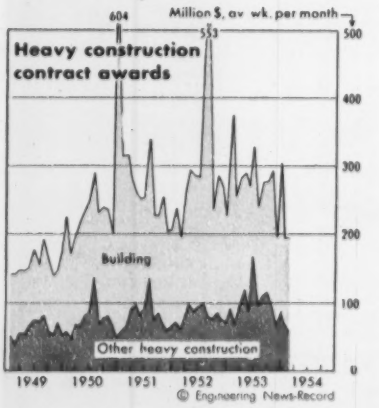
MARCH CONSTRUCTION SCOREBOARD











ENR INDEXES (1913 = 100), 20-cities' average	1954 Mar.	% Change from last Month	% Change from last Year
Construction Cost	613.99	−0.1	+4.4
Building Cost	437.17	−0.1	+2.9
WAGE-RATES, 20-cities' average			
Common	$1.944	0.0	+6.6
Skilled (aver. 3 trades)	3.100	+0.2	+5.1
Bricklayers	3.369	+0.1	+2.8
Structural Ironworkers	3.074	+0.3	+6.8
Carpenters	2.857	+0.1	+6.1
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.383	+0.2	+5.0
Structural Steel, (3-mill aver.), per cwt	4.100	0.0	+6.5
Sand, per ton	2.202	0.0	+3.2
Lumber, 2x4 Fir, per M. ft. bm.	100.639	+0.3	−5.4
Lumber, 2x4 Pine, per M. ft. bm.	90.417	−1.2	−2.8
Common brick, per M.	32.936	−0.7	+4.2
Ready-mixed concrete, per c. y.	11.984	0.0	+5.4
Structural Clay Tile, 3x12x12 per M.	160.094	+0.04	+3.7

CONTRACTS AWARDED (Millions)	1954 Feb.	1954 2-Mos. (8Weeks)*	% Change from '53 Feb.	% Change from '53 2 Mos. (9-Weeks)*
Total U. S. (ENR reported)	$766.6	$1,532.9	−25.1	−40.7
Private	459.5	809.8	−29.4	−50.2
Public	307.1	723.1	−17.4	−24.7
Federal	68.6	149.7	−30.8	−48.6
ENR Volume Index, '13 = 100	345	341	−28.1	−42.9
NEW CAPITAL (Millions)				
Total	547.1	1,008.2	−2.9	−11.8
State & Municipal Bond Sales	272.1	466.6	−5.8	−16.2
Corporate Securtiy Sales	268.9	522.2	+0.5	−7.6
Federal (non-federal work)	6.1	19.4	−15.3	−7.7
Federal (federal work)				

* Computed on weekly average

MATERIAL SHIPMENTS & LABOR SUPPLIES (Millions)	Dec. '53(D) Jan. '54(J)	12-Mos. '53	% Change from Mo.	% Change from Yr.-Cum.
Cement bbls, Bu. of Mines	14.130(D)	260.889	+2.8	+3.9
Fabr. Struc. Steel, tons AISC	.241(J)	3.118	0.0	+17.0
Lumber, mil. ft. bm., NLMA	2.701(D)	38.444	−6.3	+1.9
Lumber Prod., mil. ft. bm., NLMA	2.873(D)	39.222	+0.4	+3.7
Contract Const. Employ., BLS	2.252(J)	2.541†	−2.2	−1.2

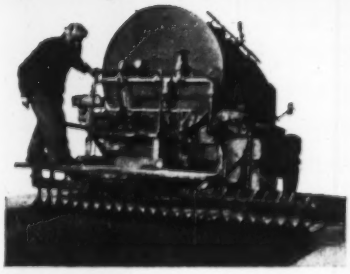
† Average

ENR CONSTRUCTION & BUILDING COST INDEXES IN 21 CITIES (1913 = 100)

	Construction cost Mar. '54	Construction cost Dec. '53	Building cost Mar. '54	Building cost Dec. '53		Construction cost Mar. '54	Construction cost Dec. '53	Building cost Mar. '54	Building cost Dec. '53
Atlanta	458	460	392	394	Los Angeles	634	626	428	419
Baltimore	549	553	424	428	Minneapolis	661	661	468	468
Birmingham	465	465	386	386	Montreal	516	550	396	430
Boston	627	624	436	433	New Orleans	506	502	419	416
Chicago	692	690	445	443	New York	732	713	509	507
Cincinnati	630	631	435	434	Philadelphia	666	666	494	494
Cleveland	712	708	442	438	Pittsburgh	642	640	469	466
Dallas	470	482	393	405	St. Louis	655	654	455	455
Denver	595	595	441	441	San Francisco	602	600	402	400
Detroit	685	685	449	448	Seattle	664	643	412	402
Kansas City	634	630	446	442					

For quarterly indexes Sept. '48 to Sept. '53 see October 8, 1953 ENR, page 93.

BITUMULS® leads in surface treatment work!



You will be interested in these facts obtained in our recent nation-wide survey:

- In the past five years most of the states in the union have *increased* the volume of sealing and surface treatment work done with asphalt emulsions.
- A majority of the counties in the country now *prefer* the use of emulsions to hot asphalt, tar and cutbacks for surface treatments.

BITUMULS LEADS ALL OTHER EMULSIONS for work of this type. As a pioneer product for Surface Treatments, Bitumuls continues as first choice of road-builders everywhere. It has won acceptance based on speed and ease of application, dependable performance, and long economical service. Bitumuls HV (high viscosity emulsion) holds more cover stone than any other binder. It sets-up faster, and provides a safe, non-skid surface.

Our new booklet, "BITUMULS SURFACE TREATMENTS AND PENETRATION PAVEMENTS," gives full details on all types of Surface Treatments, Single, Double and Triple. There are Bitumuls Engineers working out of offices near you who will welcome an opportunity to discuss your Surface Treatment work.

AMERICAN Bitumuls & Asphalt COMPANY

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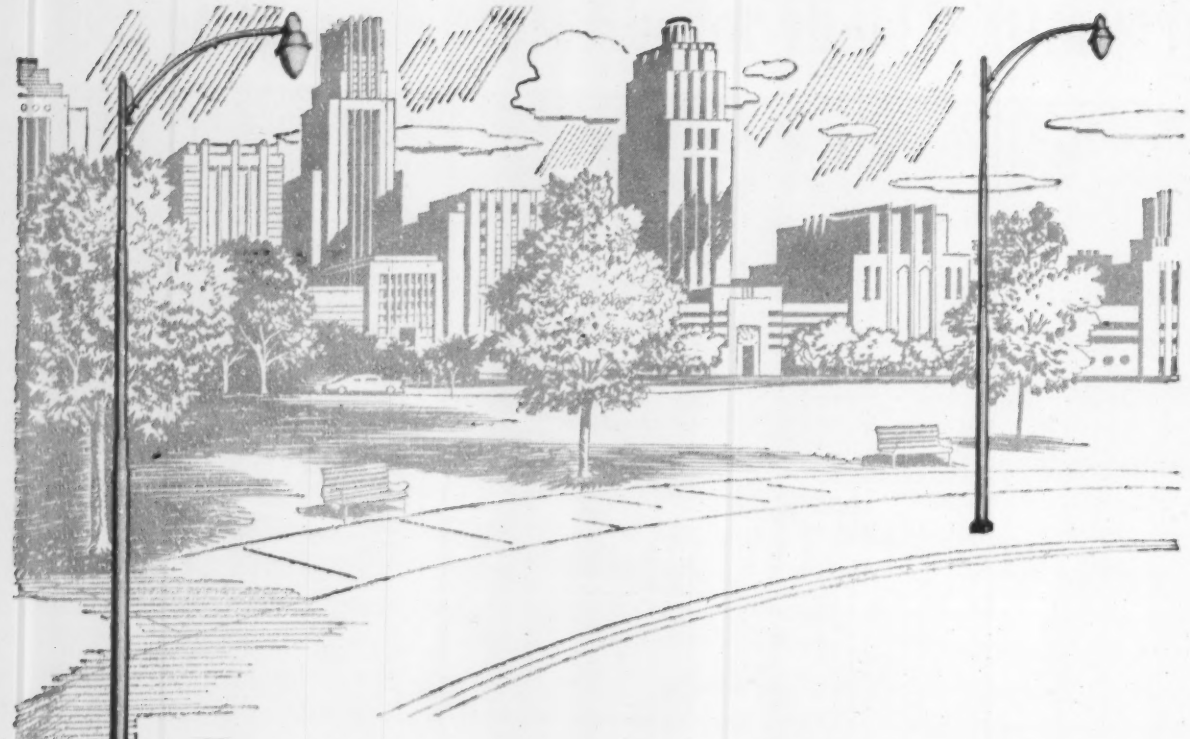
E. Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Mobile, Ala.
Columbus 15, Ohio Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La.
St. Louis 17, Mo. Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore.
Washington 5, D. C. San Juan 23, P. R.



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But there's more here than meets the eye!

THE beauty of NATIONAL Tubular Steel Poles is more than skin deep—it's a *functional* beauty. That slender grace has a practical basis. Since slim poles are not visual obstructions, they are not traffic hazards.

What's more, that straight smooth tubular steel conceals rugged strength, great enough to support the tightest trolley wires, even though steel poles need not be spaced nearly as close together as conventional standards.

And let's not forget one of the *most* practical advantages of tubular steel poles—upkeep. It's practically nil—just an occasional coat of paint. And your steel poles will last and last.

Yes, NATIONAL Tubular Steel Poles can dress up a street or dress up a town. They can do wonders for civic pride, and do favors for the city budget. They haven't got just good looks . . . NATIONAL Tubular Steel Poles have everything!

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S NATIONAL *Tubular* STEEL POLES

UNITED STATES STEEL

February contract awards duplicate January total

A lag in new contracts for public works, plus a temporary dearth of very large projects in the private field, resulted in a total of $766.6 million in heavy construction awards reported in February to ENGINEERING NEWS-RECORD and the CONSTRUCTION DAILY. That is almost exactly the same as the total of $766.3 million reported in January.

Both January and February of this year have run well below the record-breaking pace of the first two months of 1953. Contract volume is a little over $1.5 billion. That is 41% under the 1953 period when adjusted for the different number of weeks (eight in 1954 and nine in 1953). Total public awards are down 25%, and private work is off 50% for the two-month period. However, during this February contracts for private work rose 31% above January's low level, and were only 29% below private awards in February 1953.

Furthermore, awards during the last week of February, while nothing sensational, picked up to $226 million. This is the best week since the first week in January, and a good omen for a lively step-up in March.

• **Public work**—State and municipal contracts declined to $238 million last month, off 29% from January and 13% under February 1953. Federal work dropped to $69 million, the lowest month for federal contracts since September 1950.

Considering public work as a whole, two major categories advanced in February. Bridge awards were well above both January 1954, and February 1953. Sewerage in February also showed a slight increase over both the earlier months. Highway volume dropped to 7% below February 1953. Public building other than housing was off 12% from a year ago.

• **Private work**—The February total was $460 million, well above January. Mass housing and industrial building accounted for most of the rise. Commercial building showed a slight gain. So far this year, commercial shows the most strength among the private lines. Mass housing, while much lower than last year, has shown more strength in February. Industrial contracts last month were only about half the total in February 1953. For the first two months of the year, a 13% increase in commercial building is offset by declines of 42% in mass housing and 69% in industrial building.

On a regional basis, the biggest declines in overall volume (including both public and private work) have been in the three regions west of the Mississippi.

Lower pine lumber prices bring cost index down 0.1%

Sudden weakness in prices of southern pine has more than offset increases in other construction costs, bringing ENR's Construction Cost Index for March down 0.1% below the all-time high it reached in February. The new index is 613.99, based on 1913=100, 4.4% above a year ago.

The Building Cost Index for March is also down 0.1% from its all-time high in February. It is now 437.17, also based on 1913=100. That's 2.9% above a year ago.

There were price reductions on pine 2×4s in seven of the 20 U. S. cities reporting to ENR. They ranged from $1 to $2.50 per Mftbm in six cities; but in Dallas the price fell $11. This offset boosts of $2 in fir prices in Boston and Cleveland, and raises of from 25 cents to $4 in six cities. There was a $4.50 rise in the price of fir 2×4s per Mftbm in Baltimore, and $3 in San Francisco. One city—Detroit—jacked up cement prices this month, the boost was 12 cents per bbl.

On the wage front, there were increases in two cities: Cincinnati and Seattle.

(B&F continued on page 76)

ENGINEERING CONSTRUCTION CONTRACTS—FEBRUARY 1954

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Four Weeks—Thousands of Dollars (000 Omitted)

	February, 1954							U. S. Cumulative—Two Months		% Change	Canada
	New England	Middle Atlantic	South	Mid. West	West of Mississippi	Far West	Total U. S.	1954 (8 weeks)	1953 (9 weeks)	'53 to '54 Avg. Wk.	February 1954
Public Works											
Waterworks	495	1,917	5,001	871	3,674	918	**12,876**	**27,946**	36,074	−15	993
Sewerage	920	3,848	969	10,033	4,987	760	**21,517**	**42,151**	69,328	−32	407
Bridges	5,685	18,834	5,351	8,037	2,057	1,549	**41,513**	**69,239**	73,087	+ 7	935
Earthwork and drainage	261	661	11,874	379	2,415	3,250	**18,840**	**46,592**	67,715	−23	2,120
Streets and roads	3,388	9,367	23,270	12,382	13,645	5,145	**67,197**	**172,280**	188,808	+ 3	5,021
Public buildings, residential	898	389	5,157	.....	1,275	595	**8,314**	**29,021**	156,754	−79	701
Other public buildings	7,097	13,209	25,902	12,001	17,746	10,444	**86,399**	**215,326**	311,308	−22	11,880
Unclassified	13,764	13,614	7,320	1,573	12,788	1,372	**50,431**	**120,527**	177,794	−24	1,151
Total Public	**32,508**	**61,839**	**84,844**	**45,276**	**58,587**	**24,033**	**307,087**	**723,082**	**1,080,868**	**−25**	**23,208**
Federal government (included in above classifications)	13,634	10,149	24,757	1,885	13,920	4,298	**68,643**	**149,747**	328,096	−49	1,962
Private											
Bridges	.....	.....	.....	.....	110	.....	**110**	**110**	4,150	−97	.....
Industrial buildings	1,310	11,350	47,688	23,100	36,458	8,480	**128,386**	**212,722**	760,544	−69	11,828
Mass housing	9,609	75,772	31,111	59,085	35,801	20,079	**231,457**	**406,040**	784,538	−42	16,963
Commercial buildings	1,000	35,847	5,721	18,097	13,669	5,939	**80,273**	**159,900**	159,883	+13	8,650
Unclassified	.....	60	3,865	310	14,423	630	**19,288**	**31,067**	119,558	−71	3,584
Total private	**11,919**	**123,029**	**88,385**	**100,592**	**100,461**	**35,128**	**459,514**	**809,839**	**1,828,673**	**−50**	**41,025**
Total Engineering Construction:											
February, 1954 — 4 weeks	**44,427**	**184,868**	**173,229**	**145,868**	**159,048**	**59,161**	**766,601**	.....	.....	.....	**64,233**
January, 1954 — 4 weeks	36,344	222,947	90,996	197,220	129,836	88,977	**766,320**	.....	.....	.....	75,899
February, 1953 — 4 weeks	79,833	276,990	153,451	183,927	195,704	133,116	**1,023,021**	.....	.....	.....	32,060
Two Months — 1954	**80,771**	**407,815**	**264,225**	**343,088**	**288,884**	**148,138**	.....	**1,532,921**	.....	**−41**	**140,132**
Two Months — 1953	124,374	588,107	420,287	920,904	517,551	338,318	.....	.....	2,909,541	.....	136,236
% Change '53 to '54 (Avg. Wk.)	−27	−22	−29	−58	−37	−51	.....	.....	.....	.....	+16

Urban redevelopment means $500 million of work in sight

If any construction man has failed to realize that there is a huge source of potential business for him in urban renewal, he got a broad hint last week from Housing & Home Finance Administrator Albert Cole. For the first time, Cole announced dollar figures on construction arising out of urban redevelopment programs.

Cole reported that at year's end federal loans and grants had been approved for 52 slum areas in 32 cities. Construction in those areas is expected to result in at least $500 million worth of work. Public agencies now have a green light to start land acquisition and clearance, assured of federal help in financing interim expenses and for meeting part of the net costs.

It should be emphasized that, so far, most redevelopment contracts are still to be awarded. In only five cities—Baltimore, Chicago, Little Rock, Norfolk, and Philadelphia—have projects progressed to the point where tenants already have moved into newly constructed or rehabilitated houses. Altogether, redevelopment of assembled and cleared land has started in only nine project areas in seven cities.

There are many more potential projects. Cole emphasizes that this $500 million of construction spending on 52 federally approved projects covers only one-third of the 154 slum areas for which Title I plans are in an "advanced" stage. These areas are in 108 localities. In addition, there are 116 others which are considering Title I projects. Of the total of 224 localities, about two-thirds have populations under 100,000.

• **Financing**—The big obstacle to these programs, of course, is financing. But if the Administration's housing bill goes through in its present form, private redevelopment of these areas will be made easier. The bill provides that the Treasury can buy up to $300 million of mortgage paper arising out of urban redevelopment and other housing programs (ENR Feb. 25, p. 57).

Cole's breakdown of how construction money will be spent is interesting. (For some projects, it does not include costs of demolition and land clearance.)

Here is how the money will be spent:

$271 million for housing (of which only about $14 million will be for public housing);

$53.5 million for commercial construction;

$48 million for industrial construction;

$108 million for public and semi-public construction;

$17 million for site improvements.

• **Actual progress**—What is the actual status of the projects where redevelopment has not yet started? Cole reports that at the end of last year demolition was under way in 32 areas in 25 cities—including the nine projects that have reached the redevelopment stage. Land acquisition and clearance have been approved for 28 other projects in 21 cities. (That totals 60 projects: The difference between this figure and that for the 52 projects for which construction figures are available is accounted for by seven projects which are using local money to go ahead with the job until loan and grant applications are completed and approved, plus one project already approved by HHFA. This one could not supply definite construction data.)

Local public agencies are directing almost all their efforts to eliminating slums in or near central areas of their cities. About 90% of the 154 "advanced" projects are residential slum and blighted areas. The rest consist of seven other built-up blighted areas, and nine predominantly open land areas, in most cases undeveloped subdivisions that have become blighted. Loans—but not capital grants—may be made under Title I for projects consisting entirely of open land. But no project of this type has reached an advanced stage.

• **Mostly housing**—Housing will be the principal reuse in 84 projects, over half the total of "advanced" projects. Some residential reuse is also planned in 11 other projects where other uses will predominate. It's estimated that about 93% of the new housing units will be built by private redevelopers, with about five rental units for every two sales units. Public housing will predominate in only two projects, although there will be some public housing in eight others.

These projects, of course, will not be profitable as far as the federal and local governments are concerned. Estimated federal capital grant requirements for the 154 "advanced" projects total $196 million. It's also estimated that local grants-in-aid in the form of cash, land donations, site improvement and clearance work, and supporting facilties will be provided by the communities concerned at a net cost of $110 million. This is based on the assumption that when the areas involved are ready for redevelopment, they can be sold to private interests for about $150 million.

Lumber a la carte

New firm offers to deliver precut lumber to builder

Medium-sized project builders now can cut their costs by contracting for precut, preassembled lumber, delivered to the site. That's the service offered by a newly organized firm, Developers Service Co., of Paterson, N. J. Developers Service also offers to arrange mortgage financing through its own contacts with lenders.

The new firm has an arrangement with Lumber Fabricators, Inc., of Ft. Payne, Ala., which will supply cured lumber, cut it to specifications and preassemble into wall, floor, and roof sections. The lumber will be delivered to the site by Developers Service. The firm plans to concentrate in the New Jersey area at first, but will take orders anywhere.

• **Mass production**—Leonard Schwall, president of Developers Service, argues that this arrangement will give builders of medium-sized projects, say 100 to 300 homes, the advantages and economies of mass production enjoyed by really large-scale developers like Levitt. The builder no longer will buy his lumber piecemeal, but can contract for all of it at once, have it all measured and cut promptly and delivered on a definite date. On-site storage and on-site measuring and cutting would be eliminated. Developers Service claims that through the use of this preassembled lumber a builder could enclose a house and put it under roof within one day.

"This method of industrializing construction," says Schwall, "is, unlike any others previously attempted, particularly suited to the home building industry. It leaves the builder leeway to choose his own architect and his own subcontractors and to make each development and each home an individualistic and personalized creation, at a price within reach of more families than heretofore was possible."

Activity This Week

As reported to ENR
(In millions of dollars)

Amount of contracts let

	This Week	Cumulative 9 wks 1953	1952	% chge
Federal	$18.0	$167.7	$328.1	−49
State and municipal	89.2	662.6	752.8	−12
Total pub.	107.2	830.3	1,080.9	−23
Total priv.	101.0	910.8	1,828.6	−50
U. S. total	**$208.2**	**$1,741.1**	**$2,909.5**	**−40**
Contracts by type of work				
Waterworks	$4.8	$32.8	$36.0	−9
Sewerage	8.5	50.5	69.2	−27
Bridges	15.3	84.5	77.1	+10
Highways	34.3	206.5	188.8	+9
Earthwork, waterways	6.9	53.6	67.9	−21
Buildings:				
Public, excl. hsg.	27.0	242.6	311.3	−22
Housg., pub.	1.1	30.2	156.7	−81
Housg., priv.	59.6	465.6	784.7	−41
Commercial	14.9	174.8	159.9	+9
Industrial	21.0	233.6	760.6	−69
Unclassified	14.8	166.4	297.3	−44
Total	**$208.2**	**$1,741.1**	**$2,909.5**	**−40**

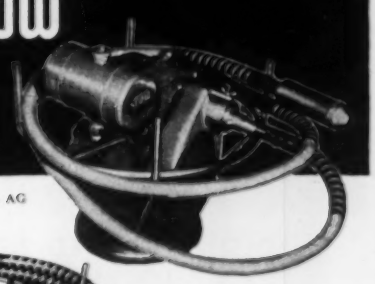
NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

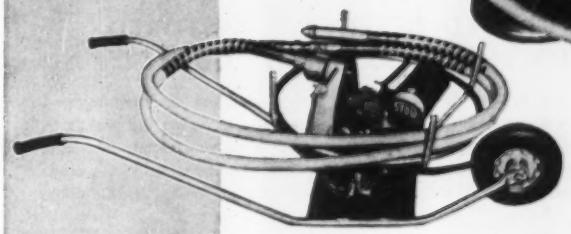
(millions of dollars)	Week of Feb. 25 1954	Cumulative 8 Wks 1954	1953-54 % chge
Corporate securities	$88.4	$522.2	−9
State and municipal:			
Excluding housing	39.1	445.6	0
Housing	7.6	21.0	−79
Federal loans	1.1	19.4	−9
Federal aid	...	...	...
Total non-federal	**$136.2**	**$1,008.2**	**−12**
Federal appro.:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	**$136.2**	**$1,008.2**	**−12**

ENR indexes		Base years = 100 1913	1926	1949
Constr. cost	Mar '54	613.99	295.14	128.71
	Feb '54	614.71	295.49	128.86
Bldg. cost	Mar '54	437.17	236.32	124.27
	Feb '54	437.55	236.53	124.38
Volume	Feb '54	345	140	100
	Jan '54	338	137	98

New performance features built into STOW CONCRETE VIBRATORS



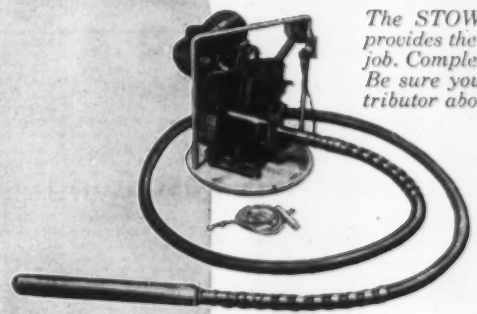
MODEL AG



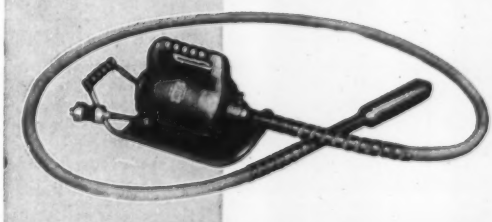
SHOWN: MODEL BGW. This is the standard STOW model BG vibrator, mounted on wheelbarrow for easy maneuverability. Model BG & BGW feature 2 HP 4 cycle, air-cooled engine; ball-bearing eccentric belt tensioner.

Contractors like STOW vibrators because the high operating speeds of this new STOW vibrator line make possible the use of heavy duty, light weight flexible shafting, and lighter, more efficient vibrator heads. And STOW design provides convenient speed control so that attachments for rubbing, grinding, cleaning may be used directly on the vibrator shafts, making it unnecessary to purchase extra shafts for this purpose.

The STOW line is complete . . . provides the right vibrator for every job. Complete accessories available. Be sure you see your STOW distributor about the STOW line!



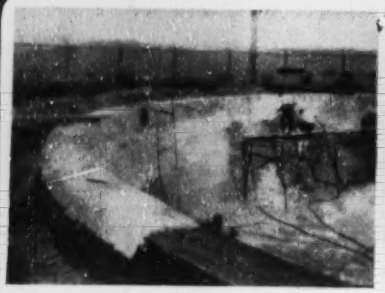
MODEL J—The lowest priced vibrator in the STOW line. Slower speed means longer, trouble-free operation. Model J features 3600 (max.) VPM, 2 HP 4 cycle air-cooled engine, and direct drive.



MODEL BU—Features 2 HP at 9000 VPM, operates on 115 volts AC or DC with splash-proof, high speed ball-bearing motor.

See how STOW can save money for you! Send for Free Bulletin 511.

STOW MANUFACTURING CO.
19 Shear Street, Binghamton, N.Y.



DISINTEGRATED RESERVOIR RESTORED BY CEMENT GUN CO. WITH "GUNITE"

Climatic conditions had ruined the surface of this water storage reservoir at a Central Pennsylvania Institution. Cement Gun Company was called in to restore the structure with "Gunite." Photograph at left, above, shows our crew removing all of the disintegrated concrete prior to covering the wall with wire mesh. With reinforcing in place, "Gunite" was applied to bring the walls up to their original thickness (see photo above, right).

Complete information on many water storage reservoirs constructed or restored by Cement Gun Company are illustrated and described in our latest catalog, together with many other types of "Gunite" work we have done. A request, on your letterhead for catalog A2400 will bring your copy by return mail.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES – ALLENTOWN, PA., U. S. A.

MANUFACTURERS OF THE CEMENT GUN

free

send for this catalog describing acker's new all-purpose digger

Send the coupon today for your copy of our new catalog showing the wide range of application as well as the many exclusive features that make the *Acker All-Purpose Digger* the most versatile and useful you can buy!

TWO MODELS TO CHOOSE FROM – Jeep mounting with compact, power take-off or skid-mounted with self contained power plant for truck mounting.

ACKER DRILL CO., Inc.
725 W. Lackawanna Avenue, Scranton, Penna.

Please send me free copy of Bulletin 40-ENR.

Name_____ Title_____

Firm_____

Street_____

City_____ State_____

OFFICIAL PROPOSALS

Bids: March 9, 1954

Pennsylvania Turnpike Commission Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Standard Time, the 9th day of March 1954, and immediately thereafter will be taken to the New House Caucus Room, 1st floor, Main Capitol Building, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

For the construction of structures and the grading, drainage and paving of the Turnpike Section 37-D, part of the Northeastern Extension of the Pennsylvania Turnpike in Kidder Township, Carbon County, Commonwealth of Pennsylvania, this section being situated as follows:

Beginning at a point 108 feet northwest of the center line of L.R. 408, T.R. 940 at Turnpike Station 1254+65 in Kidder Township, Carbon County, thence in a northwesterly direction 19,157 feet to Turnpike Station 1446+22 at a point approximately 173 feet south of the Carbon-Luzerne County Line in the center of the Lehigh River, a distance of approximately 3.63 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	652,617 cubic yards
Class 2 Excavation	11,803 cubic yards
Borrow Excavation	296,866 cubic yards
Special Subgrade	145,019 square yards
Reinforced Concrete Pavement	82,950 square yards
Class A Concrete	575 cubic yards
Class B Concrete	32 cubic yards

Copies of plans, specifications and other contract documents, including cross-sections, are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, not later than 22 February 1954. Plans, specifications, cross-sections, and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty (50.00) dollars per set.

Plans and contract documents, for this section, exclusive of cross-sections and specifications may be obtained from the Commission upon deposit of ten (10) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans, contract documents, and cross-sections returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA
TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
16 February 1954

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. (Except for earlier holiday closing)

Bids: March 11, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 11th day of March 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following project: in Ulster County, J. S. Bixby, Dist. Engr., Pleasant Valley Road, Poughkeepsie, N. Y.

Contract No.	Type	Name of Highway and Miles	Deposit for Plans	Bid Deposit	Dept. Estimate
C.T. 54-1	9" Cement Conc. Pavt. 61' Wide, Misc. Work	New York State Thruway-Catskill Section-Sub. 3 (Whiteport-Kingston, Pt. 1) 0.09 Mile	$10	$1,700	$31,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: March 16, 1954

Construction of In-Transit and Warehouse Building

The Board of Harbor Commissioners, Marine Terminal, Wilmington, Delaware, invites sealed proposals for the construction of a new In-Transit and Warehouse Building, Wharf, Grading, Water Supply, Fire Protection, Railroads, Paving and Electric Work, on 16 March 1954. Bids will be publically opened and read at the office of the Marine Terminal at 2.00 P.M., E.S.T., on the above date. Bidders may mail their bids to the Board of Harbor Commissioners, P. O. Box 1191, Wilmington, Delaware.

Harris-Dechant Associates, Consulting Engineers, 123 S. Broad Street, Philadelphia 9, Pennsylvania.

Plans, Specifications and proposal forms may be secured from the Board of Harbor Commissioners, Wilmington, Delaware by depositing $30.00 per set, which deposit will be refunded only upon the receipt of a bona fide bid, and return of the plans and specifications in good order within ten (10) days after the opening of bids; otherwise the deposit will be forfeited.

Plans and specifications may be reviewed free of charge at the Offices of the Engineers.

Each proposal must be accompanied by a certified check drawn to the order of the Board of Harbor Commissioners, or a Proposal Guaranty Bond in the amount of $25,000.

The Board reserves the right to reject any or all bids, and to accept or reject any part of any bid.

Proposals may be submitted on the separate Proposal Forms provided, but shall not be submitted on bidders letterheads.

BOARD OF HARBOR COMMISSIONERS
WILMINGTON, DELAWARE
JOSEPH S. WILSON,
President

15 February 1954

Bids: March 25, 1954

Contract No. 212

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT
COMMISSION

Sealed proposals will be received at the office of the Metropolitan District Commission, 20 Somerset Street, Boston, Massachusetts, until 1:00 P.M., Eastern Standard Time, March 25, 1954, and then publicly opened, for Contract No. 212 for furnishing and delivering cast-iron pipe and fittings, gate valves, check valves, reducing valves, air valves, bronze pipe and fittings, crane and hoists, pumps and air blower in the City of Somerville, Massachusetts. There are fourteen groups of items which may be awarded as a whole or as separate contracts, but no single group will be further subdivided and awarded to more than one bidder. Each bidder may submit a price on one or more of these groups, but must quote on each item of the particular group or groups bid. Each bidder shall deposit cash or certified checks as security in the amount of $30 for Group A, $2200 for Group B, $350 for Group C, $9000 for Group D, $230 for Group E, $1660 for Group F, $260 for Group G, $510 for Group H, $180 for Group I, $50 for Group J, $30 for Group K, $30 for Group L, $300 for Group M, $50 for Group N. A bond in at least the full amount of the contract will be required of each successful bidder to secure the faithful performance of the contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. The information for bidders, forms of proposal, contract, and performance bond, and plans and specifications may be examined at the above address, and copies thereof obtained from Frederick W. Gow, Chief Engineer of the Construction Division, upon deposit of $5 to be refunded only to bidders or to others returning them within ten days after the opening of bids. The Commonwealth reserves the right to waive any informality in, or to reject, any or all proposals. No bidder may withdraw his bid within thirty days after the actual date of the opening thereof. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.

CHARLES W. GREENOUGH,
Commissioner

February 18, 1954

Bids: March 11, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on March 11, 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, NEW ENGLAND SECTION, NEW ROCHELLE TO CONNECTICUT STATE LINE, WESTCHESTER COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-64

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $37,850.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,893.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4125) will be received at Coeur d'Alene, Idaho, until March 23, 1954, for furnishing labor and materials for earthwork, steel pipe lines, pumping plant remodeling, 150,000-gallon steel water reservoir and structures, Dalton Gardens Irrigation System, Dalton Gardens Project, Idaho. Location near Coeur d'Alene, Idaho. Principal items are: 18,660 cu. yds. excavation and backfill of pipe trenches; furnishing and installing 4- to 24-inch steel pipe, 65,000 lin. ft.; furnishing and installing 150,000-gallon steel reservoir, lump sum; furnishing and installing two 3000-gpm pumping units, lump sum; and other work. Completion time 230 days. For particulars, address Bureau of Reclamation, Coeur d'Alene, Idaho; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4122) will be received at Kirwin, Kansas, until March 25, 1954, for furnishing labor and materials for a bridge across Kirwin Dam spillway channel and road approaches and a bridge for Bow Creek crossing, Kirwin Unit, Solomon Division, Kansas, Missouri River Basin Project. Location near Kirwin, Kansas. Principal items are: 48,000 cu. yds. excavation; 600 cu. yds. concrete; 235,000 lbs. structural steel; 800 lin. ft. steel piles; and other work. Completion time 240 days. For particulars, address Bureau of Reclamation, Kirwin, Kansas; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: March 22, 1954

Construction of Pumping Station

NOTICE IS HEREBY GIVEN that pursuant to a resolution of the Town Board of the Town of Tonawanda, Erie County, New York, sealed proposals will be received and considered by said Town Board on the 22nd day of March, 1954, at 8:00 o'clock p.m., Eastern Standard Time, in the Council Room of the Municipal Building, Kenmore, New York, for the construction of a combined raw water and high service pumping station, complete with pumping equipment, inside piping 23KV, primary electric service substation, electric controls and equipment for nine pumping units, and other appurtenant work, in accordance with contract documents therefor, all of which are on file with the Town Clerk at his office in the Municipal Building, Kenmore 17, New York.

Copies of the proposed contract documents, plans, specifications, and instructions to bidders, may also be examined at the office of Nussbaumer, Clarke & Velzy, Consulting Engineers, 327 Franklin Street, Buffalo 2, New York. One copy of said documents and plans may be obtained upon deposit of Fifty Dollars ($50). Any bidder, upon returning said plans and contract documents in good condition, within twenty (20) days following the taking of bids, will be refunded the full amount of his deposit; non-bidders will similarly be refunded only one-half the deposit.

Robert Johnson
Town Clerk
TOWN OF TONAWANDA, NEW YORK

State of New Jersey
State Highway Department
Trenton

On or about March 27th a large grading and vertical sand drain contract will be advertised for the Gloucester Approaches to the proposed Delaware River Bridge. Prequalification regulations, as revised herein, will be applicable to prospective bidders on the above mentioned contract.

Regulations covering the classification of prospective bidders—issued in accordance with Title 52:35, Revised Statutes of New Jersey, 1937.

REVISED TO MARCH 27, 1954

All persons proposing to bid on state highway work must furnish a statement under oath in response to a questionnaire to be submitted by the state highway commissioner. Such statement shall fully develop the financial ability, adequacy of plant and equipment, organization, and prior experience, and such other pertinent and material facts as may be desirable.

In order that proper classification may be made, the following regulations have been adopted by the State Highway Commissioner, which will supersede existing regulations and become effective March 27, 1954.

(1) Prospective bidders will be classified according to the type of work and the amount of work on which they are entitled to bid as follows:

A. As to type of work:

"GRADING"—Work involving grading and drainage including drainage structures.

"PAVING"—Work involving grading, drainage, drainage structures and all types of paving.

"BRIDGE CONSTRUCTION"—Work involving bridges, viaducts and similar structures.

"GENERAL CONSTRUCTION" — Any type of grading, paving and bridge work ordinarily undertaken by the state highway department.

"SPECIAL MISCELLANEOUS WORK"—All other special types of work not regularly undertaken by the highway department, such as: the painting of bridges and other structures; landscaping; the taking of test borings; the demolition of buildings or other structures; the furnishing and applying of surfacing materials; plumbing, heating and ventilating work; electrical installations; underground utilities; fabrication erection and instaliation of steel and iron, and the like.

B. As to the amount of work:

Class	Amount	Class	Amount
A	$ 50,000.00	N	$500,000.00
B	75,000.00	O	600,000.00
C	100,000.00	P	700,000.00
D	125,000.00	Q	800,000.00
E	150,000.00	R	1,000,000.00
F	175,000.00	S	1,250,000.00
G	200,000.00	T	1,500,000.00
H	225,000.00	U	2,000,000.00
I	250,000.00	V	3,000,000.00
J	300,000.00	W	4,000,000.00
K	350,000.00	X	5,000,000.00
L	400,000.00	Y	6,000,000.00
M	450,000.00	Z	Unlimited

Class "Z" (Unlimited) involves work in excess of $6,000,000.00. A prospective bidder, so prequalified, will be notified of the intention of the New Jersey State Highway Department to undertake a project in the "Unlimited" class, and such prospective bidder shall be required to specifically prequalify to bid upon the work in question by applying for such specific classification at least 20 days before the date set for the receiving of bids.

A prospective bidder, whose statements do not qualify him to bid in an amount that will be sufficient to place him in "Class A," will be graded and classed according to his actual ability to undertake a project as shown by his statements.

(2) Each prospective bidder must furnish UNDER OATH the following statements:

A. A statement as to financial ability, which statement shall show quick assets and current liabilities, and which shall include verification of lines of credit extended by banks.

B. A statement as to plant and equipment which shall give complete details as to cost, age, condition and present value.

C. A statement as to organization which shall develop the adequacy of such organization, including key personnel, to undertake a project in the classification desired.

D. A statement as to prior experience which shall show the number of years the prospective bidder has been engaged in the contracting business and shall further disclose generally his experience over that period.

E. A statement which shall give an accurate and complete record of work done in the past two years, giving the name of projects undertaken, the type of work, the location, the contract price, and the name of the engineer in charge for the owner.

F. A statement which shall list in detail any liens, stop notices or claims filed against any project within the past two years. This statement shall also disclose any labor troubles experience, any failure or failures to complete a contract or contracts, and any penalties imposed by reason of any contract undertaken within the said two-year period. The prospective bidder shall explain such items.

G. A statement setting forth any other pertinent and material facts that will justify the rating desired.

(3) Each prospective bidder shall state the type of work for which he seeks to be CLASSIFIED.

(4) Each prospective bidder will be CLASSIFIED for one or more types of work and will be rated in accordance with his financial ability, adequacy of plant and equipment, organization, prior experience, record of construction, and any other pertinent and material facts which may affect such CLASSIFICATION. The prospective bidder will be assigned a CLASSIFICATION, which will designate the type and quantity of work upon which he will be eligible to bid. The State Highway Commissioner will give notice of such CLASSIFICATION by registered mail within eight (8) days after receipt of such fully executed prequalification questionnaire.

(5) A prospective bidder dissatisfied with his CLASSIFICATION may request a hearing before the New Jersey State Highway Commissioner, and at the hearing may present further evidence to justify a different CLASSIFICATION. No change in CLASSIFICATION where the letting has been advertised, will be made unless written request shall have been received at least twenty (20) days preceding the final day for the submission of bids.

(6) Any prospective bidder dissatisfied with the ruling of the State Highway Commissioner or with the original CLASSIFICATION, if notice of the CLASSIFICATION shall have been sent him not less than twelve (12) days prior to the letting of the contract, may request a hearing before the Board of Review. This request must be filed not less than ten (10) days prior to the final day for the submission of bids.

(7) When a prospective bidder has been assigned a CLASSIFICATION, he shall be entitled to bid on any proposal within his class for a period not exceeding six (6) months from the date shown upon his prequalification questionnaire. However, no bid will be received from any prospective bidder on any given date unless such prospective bidder shall have filed with the Department before such date a prequalification questionnaire which will not be more than six (6) months old on the date such prospective bidder submits his bid. Prospective bidders shall submit prequalification questionnaires, as provided herein, every six (6) months, or on such other intermediate occasions as may be deemed necessary by the State Highway Commissioner.

(8) Bids will be accepted only from prospective bidders who have been assigned a CLASSIFICATION in accordance with Title 52:35 R. S. 1937 and the Regulations adopted herein and under no circumstances will bids be accepted from bidders who have not been CLASSIFIED, nor for work different in type or greater in amount than that to which the CLASSIFICATION of the bidder entitles him. When a doubt arises as to whether a bid is within the class to which the prospective bidder is qualified, the bid will be opened provisionally, and if it appears that the bid is, in fact, within a higher class than that to which the prospective bidder is CLASSIFIED, the bid will be immediately excluded.

(9) The State Highway Commissioner may reject any bidder at any time prior to the actual awarding of a contract where there have been developments subsequent to qualification and CLASSIFICATION which, in the opinion of the State Highway Commissioner, would affect the responsibility of the bidder. Before taking such action the State Highway Commissioner will notify the bidder and give him an opportunity to present additional information.

(10) In order that the State Highway Commissioner may have the necessary information to pass upon the ability of a bidder to satisfactorily complete a project, each bidder must submit with his bid on each proposal a revised financial statement, a plan and equipment statement and other pertinent data under oath in response to a questionnaire provided by the State Highway Commissioner. Revised statements submitted with bids by contractors holding CLASSIFICATIONS up to and including Class "U" ($2,000,000.00) must be as of the close of business at the end of the month immediately preceding that during which bids are being received. In the instance of contractors holding Class "V," "W," and "X," "Y" and "Z" (Unlimited) CLASSIFICATIONS the resubmission of statements upon which the contractor was last CLASSIFIED or RECLASSIFIED will be permitted, provided that the statement has attached to it an affidavit to the effect that there has been no material change in financial condition since the former date of submission.

(11) The above Regulations will be strictly adhered to and no deviation whatsoever will be allowed.

(Attention is called to excerpt from Title 52:35, Revised Statutes of New Jersey, 1937):

"Any person who makes, or causes to be made, any false, deceptive or fraudulent statement in the questionnaire required to be submitted, or in the course of any hearing under this act, shall be guilty of a misdemeanor, and upon conviction shall be sentenced to pay a fine of not less than one hundred dollars ($100.00), nor more than one thousand dollars ($1,000.00), and shall be permanently disqualified from bidding on all public work of the State of New Jersey; or, in the case of an individual or the officer or employee charged with the duty of making such questionnaire for a person, firm, copartnership, association or corporation, to pay such fine or undergo imprisonment, not exceeding six months, or both."

The above Regulations were formally adopted by the State Highway Commissioner, on the twenty-third day of February, 1954, effective March 27, 1954.

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POSITIONS VACANT

PRIVATE UTILITY in So. Calif. desires young graduate civil engineer capable of advancing in later years to an executive position. Work principally involves design, field investigation and eventual supervision of construction and maintenance projects on hydro electric facilities such as dams, flowlines, penstocks, etc. State salary requirements in detailed letter of experience and scholastic background. P-1800, Engineering News-Record.

CONSTRUCTION FOREMAN sewer systems etc., must have heavy experience and be available at present in New Jersey. P-1801, Engineering News-Record.

BRIDGE DESIGNERS and draftsmen wanted. State education, experience, and salary desired in reply. T. B. Gunter, Jr., Bridge Engineer, State Highway and Public Works Commission, Raleigh, North Carolina.

SUPERINTENDENT LARGE bridge project in South. Prefer graduate 35-45 with heavy experience cofferdams, piledriving, floating equipment, structural steel erection, concrete, etc. Progressive firm adding to expanding supervisory staff. Submit complete details including age, education, experience, references, availability, salary expected. P-1750, Engineering News-Record.

WANTED: CONSTRUCTION Superintendent by March 15 for work in New England, with experience in industrial type buildings and Government projects. Must be capable of taking complete charge of work, including concrete and masonry. Send full record of education, past experience, references, and salary expected. P-1545, Engineering News-Record.

SEWERAGE DEPARTMENT Superintendent—Take charge of primary treatment plant and maintenance of sewerage system. Experience required. Salary $400 per month. Submit age, experience and references. Write City Engineer, South Milwaukee, Wisconsin.

GRAVEL PLANT Superintendent for portable and stationary plant in Michigan and Indiana. State exact experience and wages. P-1810, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT Wanted. Small but old, well-known general construction firm in Albany area desires to negotiate mutually profitable agreement with a thoroughly qualified all-around construction superintendent who is also good at keeping records, estimating, expediting, etc. Must be between 30 and 40 years old and a graduate civil engineer is preferred. Write box P-1806, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Interested in only top quality men with five or more years highly successful experience. Send complete written information for investigational purposes. Bristol Steel and Iron Works, Inc., Bristol, Virginia-Tennessee.

BUILDING ESTIMATOR — Graduate Engineer preferred. Must be thoroughly experienced in bidding and constructing of Sewer Disposal Plants. Well established Construction Company, bidding throughout Southeast. Write Contracting Company, P. O. Box 1580, Columbus, Georgia.

(Continued on page 82)

HELP WANTED

Production superintendent on excavation experienced with scrapers and shovels on super highway grading with following of good foremen. State experience, salary, references.

P-1815, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Replies will be treated confidential and arrangements will be made to interview selected applicants. Please submit complete resume stating experience, education, salary required and date available to:

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P-1774, Engineering News-Record
330 W. 42nd Street, New York 36, N. Y.

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2 @ **Starting Salary $4320 per year, with pension and hospitalization plans, two weeks vacation. B.S. Degree in College of Civil Engineering desirable but not required; recent or February or June, 1954, graduates preferred; otherwise applicants must have high-school education and not less than four years experience in Civil Engineering work including drafting. Location Chicago Area.**

P-1804, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

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P-1688, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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For position as Town Engineer. Act in capacity of Engineer and Building and Plumbing Inspector. Professional License Required. Submit resume. State salary desired. Address communications:

SUPERVISOR, Town of Mamaroneck
158 West Post Road Mamaroneck, New York

POSITIONS VACANT
(Continued from page 81)

WANTED: EXECUTIVE Concrete Form Engineer, thoroughly experienced in competitive concrete construction, management, bidding, costs and design. Applicant shall be a specialist with a successful cost experience record. This is a permanent position with desirable working conditions. Apply to: Geo. Sheaf & Co., 449 Neilston St., Columbus 3, Ohio.

WANTED: CONTRACTOR to cut and burn several hundred acres of trees and brush. Write P. O. Box 1017, Danbury, Conn.

AIR POLLUTION Engineer—to work in newly formed air pollution control district Southern California County of 300,000 population. Engineering degree and 2 years recent experience in a field giving familiarity with industrial processes affecting air pollution. Registration as chemical, mechanical or civil engineer in California. Salary $489-$608 per month. Orange County Personnel Department, 644 North Broadway, Santa Ana, California.

ARCHITECTURAL ENGINEER experienced in designing factories, warehouses and industrial buildings in structural steel and reinforced concrete beam-girder or flat slab, wanted as assistant to Chief Engineer of N. Y. City firm specializing in the design and construction of industrial plants. N. Y. State Prof. Engineer's license necessary. Must have knowledge of architectural requirements for such buildings. Give education, experience, salary, etc., fully, including references. P-1865, Engineering News-Record.

LARGE, WELL established Contractor in the Middle West, has a permanent position open for a Building Construction Supt. to construct: Schools, Churches, Hospitals, & Office Bldgs. We do not want an office executive for this job, but rather a practical man who has actually built things and has the know how acquired from experience. State work history, age, and approximate saalry requirements. P-1913, Engineering News-Record.

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SALES ENGINEER—Pittsburgh, Pennsylvania and Albany, New York territories open with established national concern selling prefabricated metal products to engineering and construction markets. Positions offered are permanent and present excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Age 24 to 30. Car furnished. Complete training program. Salary and bonus. RW-1420, Engineering News-Record.

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SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

ACCOUNTANT AUDITOR — Desires foreign situation. 18 years diversified foreign and stateside experience in all phases of government and private construction accounting. Now employed. Available April 1st. PW-1763, Engineering News-Record.

GENERAL SUPERINTENDENT, 25 years diversified experience including industrial plant construction, heavy excavation soil and rock, docks and piers, concrete structures, highways, bridges, dams, sewer systems and treatment plants, water systems and pumping stations. Capable of assuming full responsibility on large job. Good background, know men and equipment. Good references, available any location immediately. PW-1764, Engineering News-Record.

PROJECT MANAGER, construction superintendent or engineer (graduate), 28 years experience heavy construction, industrial buildings, machinery. PW-1790, Engineering News-Record.

STRUCTURAL ENGINEER: over 25 years experience in structural steel and reinforced concrete. In charge of medium sized engineering organizations for last 15 years. Technical graduate. PW-1610, Engineering News-Record.

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STRUCTURAL ENGINEER, registered, 22 years subways, waterfronts, buildings, power and chemical plants, desires part time work. PW-1721, Engineering News-Record.

CONSTRUCTION ENGINEER — C.E. graduate with 25 years successful experience supervisory capacity both field and office. Sound knowledge all phases general construction and some industrial chemical. Seeking connection where top man required. PW-1307, Engineering News-Record.

STRUCTURAL ENGINEER, registered, 24 years subways, waterfronts, buildings, power, and chemical plants, available for responsible position anywhere. PW-1726, Engineering News-Record.

CONSTRUCTION EXECUTIVE, thirty years experience, buildings and heavy construction, field and office, seeks new connection in Office of General Contractor or as Project Manager on large job. Thorough organizer, with sound knowledge of all details of contracting, able to assume full responsibility. New York or vicinity preferred. PW-1751, Engineering News-Record.

CHIEF ENGINEER—Registered structural engineer, professional engineer, and architect, 25 years experience in the design of industrial plants and buildings. PW-1831, Engineering News-Record.

PAINTING SUP'T. Now employed overseas project desires change. 24 years of field, technical, purchasing and native training experience. Will relocate stateside or foreign. PW-1834, Engineering News-Record.

SURVEYOR, WITH executive experience covering surveys, railroads, mines, plantations, mostly in Latin America. Middle aged Spanish speaking American. House needed for couple. Salary secondary. PW-1827, Engineering News-Record.

CIVIL ENGINEER—BSCE, 4 years Turnpike, Highway, Heavy Const. Anywhere U.S.A. PW-1875, Engineering News-Record.

CIVIL ENGINEER graduate. Age 33, 8 years experience, 2½ years in field, 5½ years in office. Experienced in field supervision, design, drafting, estimating, costs, quantity take-off; also experience in reinforced and prestressed concrete. Prefer N. Y. area. Available March 15th. PW-1899, Engineering News-Record.

ACCOUNTANT—OFFICE manager four years with construction equipment dealer. New Jersey, New York, Connecticut—Box PW-1898, Engineering News-Record.

BUILDING ESTIMATOR, 20 years experience all type structures, pricing, sub-bids expediting etc.—Graduate registered engineer. PW-1910, Engineering News-Record.

ENGINEERING EXECUTIVE Graduate with broad experience in administration, design, fabrication, and sales of mechanical and structural products desires position in sound progressive company, managing, promoting development and sales, providing talent and new spirit where interest lags. Now employed, but desires to exact energy to better advantage. PW-1901, Enginering News-Record.

GRADUATE C.E. (26)—Three years R.C. and prestressing design, circular and linear structures. Will relocate. PW-1885, Engineering News-Record.

OFFICE MANAGER—Accountant—36 for contractor's office or for field assignment stateside or overseas. PW-1877, Engineering News-Record.

(Continued on the opposite page)

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POSITIONS WANTED
(Continued from opposite page)

TUNNEL CONSTRUCTION Superintendent—20 years wide experience driving and concrete lining, excellent following. Available March first. Complete resume on inquiry. PW-1640, Engineering News-Record.

CONSTRUCTION ENGINEER — C.E. Grad., Reg. Prof. Eng. 21 years construction experience, 13 of which as Supt. of Const. Know estimating, job pushing, equipment, job organizing, administration. About 70% experience in heavy construction such as pile driving, docks, bridges. 30% in industrial construction. Have a well rounded experience now wish to secure job of permanent nature. Would like big job with big company or top position with small company. Any location. $200 per week. PW-1855, Engineering News-Record.

BUSINESS OPPORTUNITIES

Experience Civil and Structural engineer interested buying or associating with established high-grade practise. BO-1707, Engineering News-Record.

American licensed British Manufacturer of earth moving and other industrial equipment is expanding into new development territory and wishes to hear from all aggressive U. S. companies who are interested in the distribution, or the ultimate licensed manufacturer of their product within the sterling area. All replies received in confidence, and first class American references gladly supplied. Cheshire Engineering Co., 19., Berkeley Street, London, W.1., England.

Lady having inherited a large industrial establishment, (about 100 modern machines) situated in Paris suburb, having to do with manufacture of precision equipment, is looking for associate. Write Havas No. 348/598, rue Vivienne 17, Paris, who will forward.

Engineer wishes to dispose of old established Civil Engineering and Land Surveying business located in a very active area close to New York City. BO-1829, Engineering News-Record.

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M-1916, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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210 CFM Worthington (GAS or DIESEL) Port
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315 CFM Worthington (GAS or DIESEL) Port
387 CFM Gardner Semi-Portable 75 HP
445 CFM Gardner Semi-Portable 100 HP
462 CFM 12-14½ x 13 American AF-5 STEAM
500 CFM Worthington (DIESEL) Portable
538 CFM Worthington Semi-Portable, 100 HP
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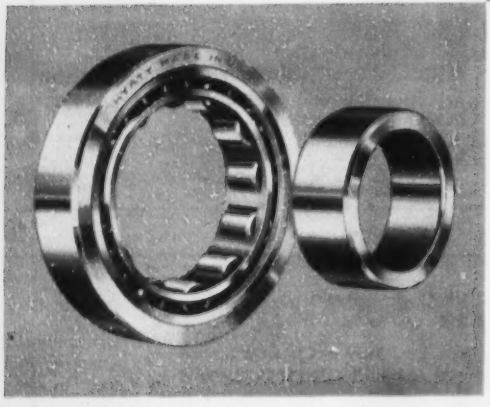

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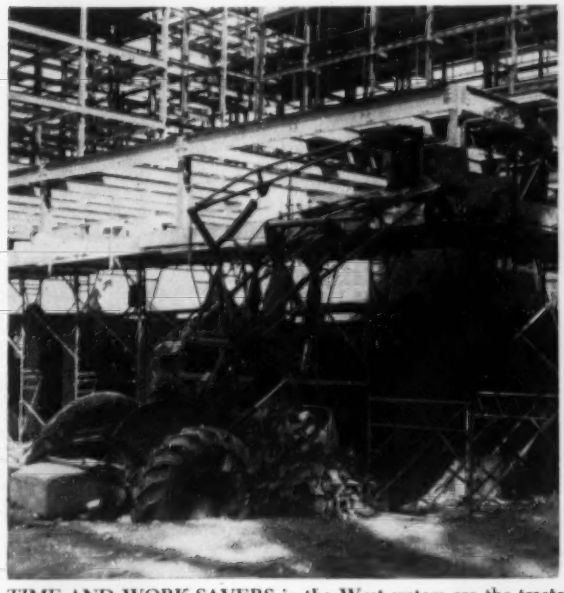


TIME AND WORK SAVERS in the West system are the tractor and fork-lift combination at left and the fork-lift brick buggy at right. The two units permit delivery of masonry materials from suppliers to bricklayer without breaking the pallet package.

Cutting masonry costs?—Go West, young man

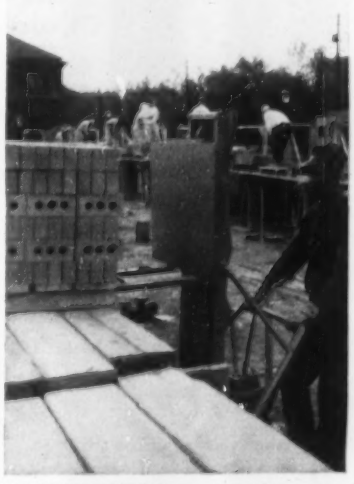
W. M. West & Son develops mechanized brick handling method that saves $21 a thousand

For several years a Cleveland masonry contracting firm, W. M. West & Son, has used a unique material handling system to bring palletized masonry materials to the bricklayer with a minimum amount of labor. The method is reported to have cut in-wall masonry costs for the firm by as much as from 15% to 20%.

Key tools for the material handling method are a lightweight "brick buggy" for moving the palletized materials on scaffolds, a front-end fork-lift attachment mounted on a Case industrial tractor and a four-wheeled mortar box for scaffold delivery of mortar. This equipment is now being offered for sale and rental by the contracting firm's manufacturing and distributing subsidiary.

According to W. Stanley West, president of West & Son and developer of the system, the old manual handling systems required three laborers or helpers for every four bricklayers on an ordinary masonry job; however, the West system can cut this ratio to as low as three to one.

The first step in developing the new method was to adopt a standard-sized wooden pallet small enough to be handled on a regular scaffold and large enough to accommodate every masonry material in the exact quantity to cover a wall section approximately 4 x 10 ft—normal working area for a bricklayer. After considerable experimentation a 24 x 32-in. size was chosen. This pallet holds 240 bricks—about four wheelbarrow loads—or a total capacity of 1,000 lb.



HIGH LIFTING buggy is used on ground floor construction without scaffolding.

West has found that furnishing these pallets to brick suppliers for use in delivering specified materials is cheaper than accepting loose lots and palletizing at the job site.

To unload palletized materials upon delivery and to move them on the ground, West attached a special front-end fork-lift to a Case tractor. This lift has a capacity of 2,000 lb and is available in 9½-ft and 20-ft elevating heights. The 20-ft size permits transferral of palletized materials directly from stockpile to scaffold.

The answer to the question of how to move the bricks once they are on the scaffold came in the development of the "brick buggy." This unit is constructed of lightweight tubular steel, weighs 200 lb and has a total carrying capacity of 1,000 lb. It measures 47 in. wide, 52 in. long and 45 in. high.

The buggy mounting consists of three pneumatic-tired wheels with the rear wheel mounted on a swivel for compact turning. A hand-operated hydraulic ram with either a 10-in. or 5-ft lift enables the operator to lift and deposit the load at will.

The higher lift is used on ground

(*Continued on page 92*)

floor construction where there is no scaffold. Brakes are added for greater control on inclines.

Carrying the idea of mobile loading one step further, West devised a mortar box with four wheels—two on swivel casters. This box receives the entire mix from a 6-cu ft mixer, is carried by the tractor to the hoist and rolled off when scaffold level is reached.

To facilitate use of this equipment some adjustments were made in standard scaffolding procedure. Where masonry walls are built from exterior tubular scaffold and materials must be moved by a hoist, the standard 5-ft width must be widened 30 in. on the inside and 20 in. on the outside. According to West, this is done by attaching suitable brackets on the underside of standard scaffolding.

On outside masonry construction where a suspended cable scaffold is used, the standard width of the 8-ft wheeling type can be increased by the addition of 10-ft long, 2-in. pipe putlogs fastened directly under scaffold planking with U-bolts. This moves the inside drum and cable 2 ft from the wall and creates a clear working space for the bricklayer. In neither case is any special planking required.

West supplies only the tractor and fork-lift, the brick buggy and mortar box. Contracting firms using this equipment must supply their own pallets and make their own alterations on scaffolding. According to the inventor, the extra expense on scaffolding is slight in comparison with the savings in using the overall system.

The tractor and fork-lift combination sells for less than $3,000 or can be leased for about $300 a month. The buggies sell for $500 but also can be leased for $55 a month. The mobile mortar box is available solely on a rental basis of $15 per month.

To date the new system has been used mainly on large building construction, but the company believes there is no reason why the method can't be employed on multiple unit housing as well if equipment use is properly adapted. West does not believe that his method can cut masonry costs on individual home construction since economies are not realized to the full when less than ten bricklayers are working on a job.

As far as labor union reaction is concerned, none of those involved has made any public statement. However, one union chief said privately that he believed it would increase the number of masonry construction jobs and better working conditions on the job site.

In a similar vein, a representative of one of Cleveland's largest building supply houses stated that the West system may stem the new trend toward prefabricated and metal siding for buildings. He says that, at a 15% to 20% reduction in cost, masonry construction will be down to or even below cost levels on sheet siding. West Brick Buggy Corp., Cleveland, Ohio.

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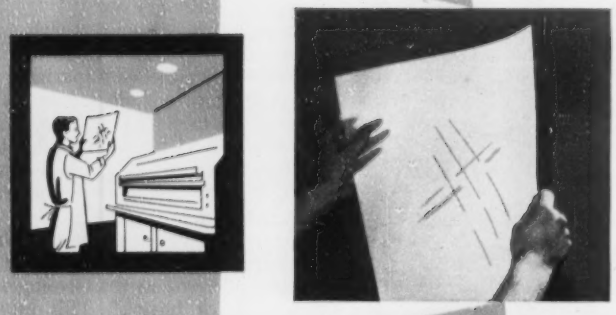
The vacuum created by the water ejector provides a direct flow of chlorine through the system. The pressure of dry chlorine gas coming in is re-

(Continued on page 94)

SEEING is BELIEVING!



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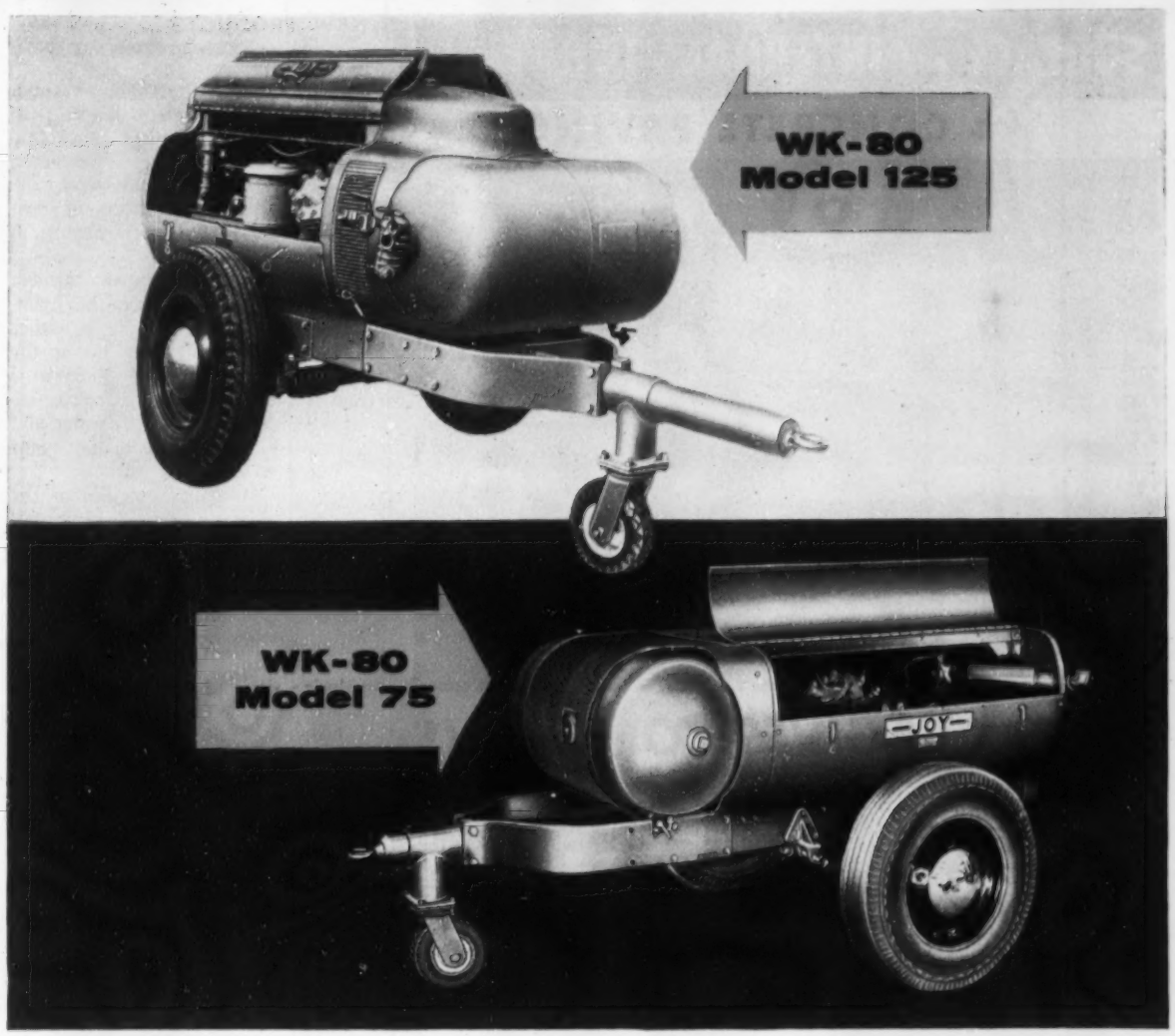

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These two new portables incorporate the outstanding features of the complete line of Joy Portables (now 75 to 630 CFM) . . . low piston speeds, direct-concentric valves, two stage compression, full force-feed lubrication, compact lightweight construction.

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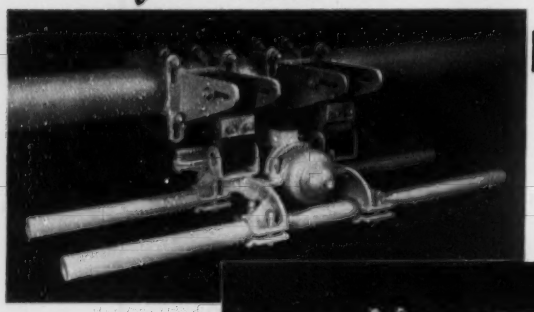
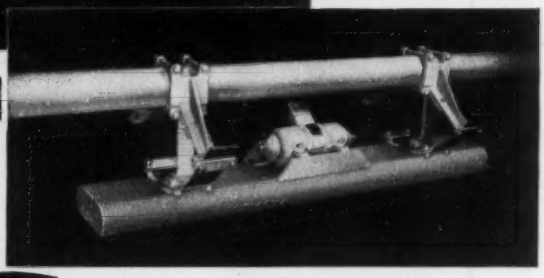


INTERNAL TYPE

Tubes vibrate deep in concrete. One unit, as shown, for each 5'-0" (maximum) of slab width. Usually attached to front of finisher.



SURFACE TYPE

Tube vibrates on surface. Accomplishes thorough densification of 10" concrete slabs. One unit, as shown, for each 6'-0" (maximum) of slab width. Usually attached to rear of spreader.

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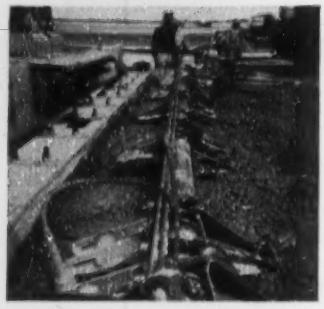
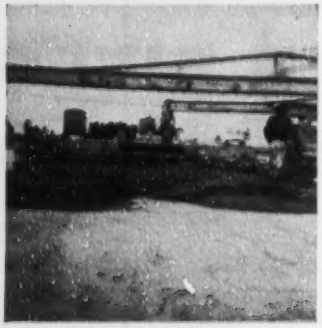


A 25', 5-motor Tube of the internal type quickly plasticizing a tough mix on thick slab construction.

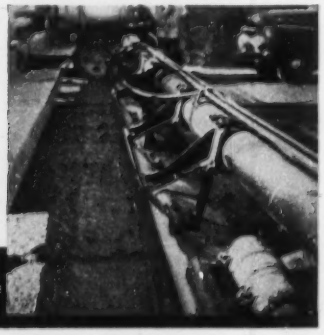


On this job, on which no spreader was used, the Paving Tube materially reduced the cost of spreading concrete.

The contractor who owns a Jackson Paving Tube can quickly switch from INTERNAL to SURFACE vibration, or vice versa, and meet any concrete slab specifications — at a minimum of equipment investment.

Supplied with extraordinarily powerful motors, the JACKSON INTERNAL Paving Tube will thoroughly vibrate all concrete slabs as thick as 24" and as wide as 25', quickly plasticizing the very dry, harsh mixes. Attached to a standard finisher, its use materially reduces spreading labor where no spreader is used. Adapted to SURFACE vibratory operation, it will do a perfect job of vibrating any mix in depths up to 12". Powered by a Jackson Portable Power Plant mounted on parent equipment and controlled by its operator.

For better results and lowest possible costs buy a JACKSON Vibratory Paving Tube. See your Jackson distributor or write for complete details.



In this view note the highly plastic condition of the concrete accomplished by the surface type Paving Tube towed by the spreader.

JACKSON VIBRATORS, INC.
LUDINGTON MICHIGAN

duced to 20-in. water column vacuum by the vacuum regulator before passing through a wide-range meter calibrated for direct reading. This meter, visible through a window at the front of the cabinet, enables an operator to spot instantly any change in chlorine flow rate.

Next, the chlorine goes through the rate valve, which can be maintained at the desired setting by either direct or remote means. Flow in the valve is kept constant by a differential pressure regulator. In the ejector assembly, gas is mixed with water and the solution goes on to the point of injection.

The six standard capacities of the chlorinator range from 100-1500 ppd, up to 500-600 ppd. Since flow meters can be interchanged, the capacity range of any one instrument can be extended substantially. For example, by alternating only two flow meters to satisfy large seasonal changes in chlorine demand, a range of 30 to 6000 ppd can be provided.

Loss of vacum or physical breakage in any part of the system automatically stops gas flow—so does extreme low temperature, which indicates possible existence of liquid chlorine in the vacuum regulator.

During shut down, a vacuum breaker on a by-pass between the upstream side of the rate valve and the top of the pressure regulator stops the system from flooding with water. A check valve in the ejector assembly prevents a reverse flow. An overflow block bleeds out chlorine at pressures of atmosphere or higher. A vent to the outdoors is connected to the vacuum breaker, vacuum regulator and differential pressure regulator.

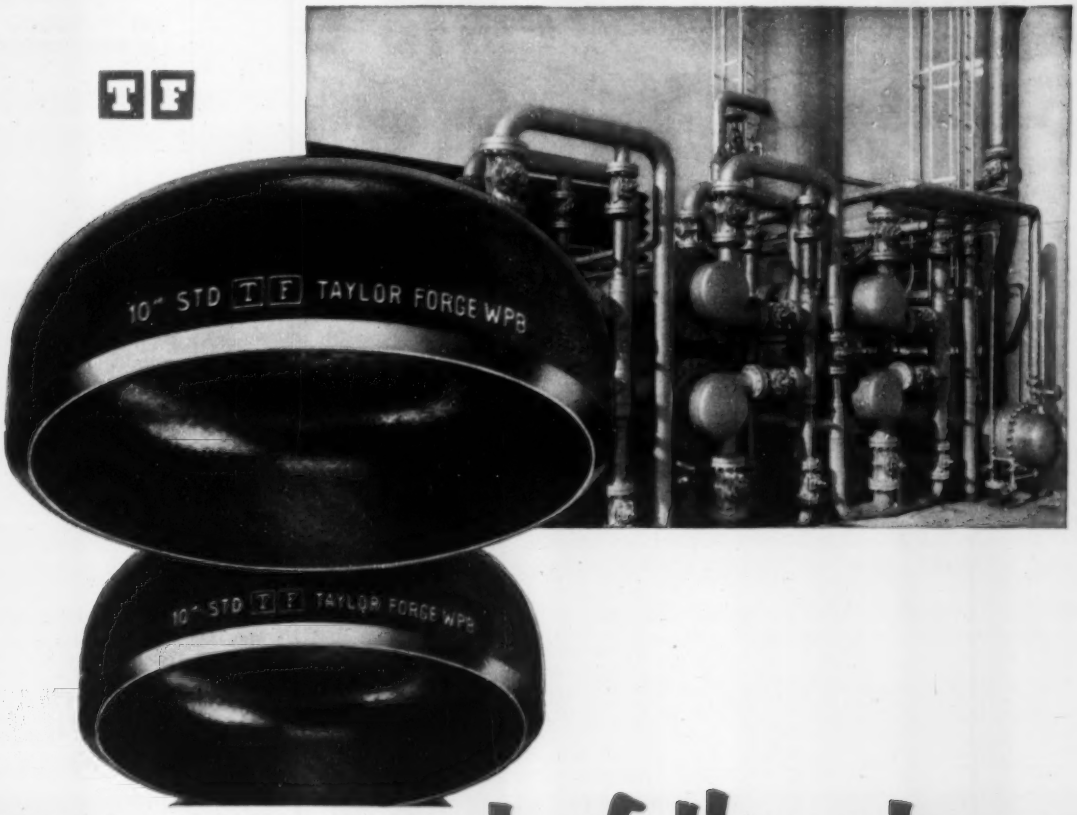
Cabinet size of the chlorinator is 36 x 68-in. Simple, corrosion-resistant components are said to reduce requirements for maintenance and spare parts to a minimum. FISCHER & PORTER CO., 16 JACKSONVILLE ROAD, HATBORO, PA.

Hoists beat stress with free-swinging cylinders

Perfection's new line of telescopic hoists—designed for 12 to 24-ft dump bodies for trailers or tandem trucks—features cylinders mounted with pin-eye and connections to permit a free-swinging action.

This freedom of action is said to eliminate stress and strain on the hoist when a truck is operating under unbalanced loading conditions and insures longer packing life. An equalizer unit, which meters oil under

(Continued on page 96)



Caps are part of the story

The announcement of the WeldELL line, back in 1931, created a considerable sensation in the piping field. Pipe welding was then just beginning to emerge from the crude, cut-fit-patch stage and the only welding fittings then in use were simply elbows.

But here was a *full line* of welding fittings—not only the long and short radius ells, but also full branch and reducing tees, concentric and eccentric reducers, stub ends, welding neck flanges . . . even *caps!*

You know what happened: The WeldELL line had taken pipe welding out of darkness into light . . . had provided the impetus and set the pattern of modern pipe welding practice.

Yes, the WeldELL line was the first complete line—the first engineered line . . . and the fittings that showed the way are still showing the way. For up-to-the-minute facts about the WeldELL line see your Taylor Forge Distributor.

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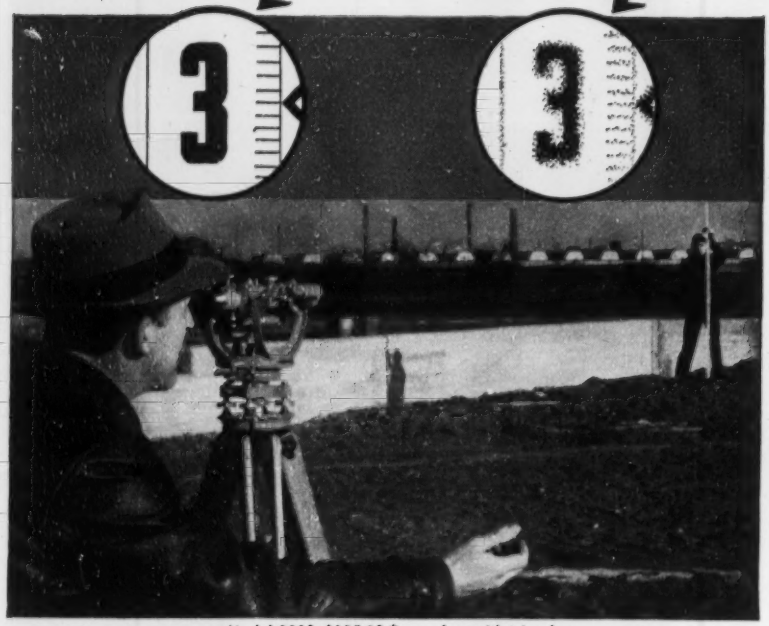

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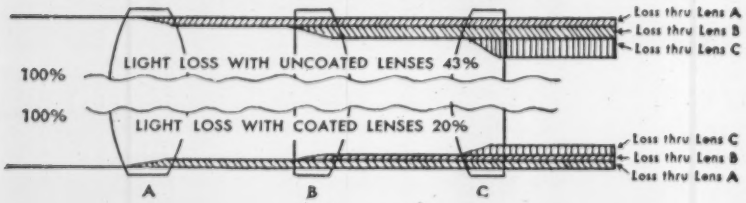
COMPARISON OF LIGHT PASSAGE



And there's more!

White Universal Level-Transits also offer you internal focusing, guarded vertical arc and ball bearing race which insures smooth operation, even in sub-zero temperatures. Check one out on your next trip. You'll soon be convinced a White can make your work faster, easier, more accurate. Write for Bulletin 1053. DAVID WHITE COMPANY, 315 W. Court Street, Milwaukee 12, Wisconsin.

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pressure to each cylinder, provides uniform body raising regardless of unbalanced loading conditions.

The hydraulic pump features a development called "pressure pocketing"—a method of applying pressure to the back of the thrust plates to keep them in sealing contact with the gear ends. This design is said to reduce friction, wear and oil slippage to a minimum. The pump—spur gear type with roller bearings and bronze wear plates—is combined in a single unit with control and relief valves to eliminate cost of external piping.

Four hoist models are available: Single-acting units with either 7 or 8-in. cylinders and 80-in. stroke; single-acting units with 7 or 8-in. cylinders and 54-in. stroke.

On trailer applications, twin models are available for power fifth-wheel installation or with hydraulic pump mounted on the tractor. Quick disconnecting fittings for hose connection to the trailer are provided. PERFECTION STEEL BODY CO., GALION, OHIO.

Hollow metal doors don improved hardware

Two improvements have been added to Fenestra hollow metal doors: removable mullion and panic-exit hardware. Because of these new features, both doors operate as single units, with no overlapping astragal.

The heavy rolled steel tube section—2-in. sq. and ⅛-in. thick—forming the mullion between the doors can be removed to provide a wide opening for moving large equipment in and out of a building. Two set screws in the head cap release the mullion.

The heavy duty rim-type panic exit bolts are said to operate more simply because they are surface applied. There is no thumb piece to complicate the mechanism, and both doors in the unit can be operated from the inside at all times. Only one door of the pair has key control from the outside. DETROIT STEEL PRODUCTS CO., 3159 GRIFFIN ST., DETROIT 11, MICH.

GE's new 1½-hp motor weighs in at 30 lbs

The new 1½-hp motor that General Electric Co. has added to its jet pump line weighs only 30 lbs. Although the unit is said to be 30% to 60% lighter than similar motors on the market, it carries the same high loads.

Rated at 3450 rpm, the motor features leads of color-coded braidless neoprene, automotive type grease fittings and locked bearings. Use of a

(Continued on page 98)

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capacitor helps start heavy loads and reduces in-rush current to aid in eliminating light flicker on the starting cycle. A specially designed ventilation system draws air through the motor to give increased cooling.

Two NEMA ⅝-in. diameter shafts are offered: a cold-rolled steel shaft 1⅞-in. long with a keyway, and a stainless steel shaft with a standard thread.

The motor is available at 115/230 volts, 60 cycles, single phase—and 208-220/440 volts, 60-50 cycles, polyphase. General Electric Co., Schenectady 5, N. Y.

New air heating system does away with ductwork

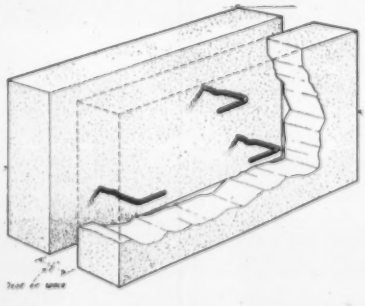
The latest forced air heating system unveiled by Royal Jet not only eliminates costly ductwork and permits warm air outlets in every room —but is said to provide even heat distribution through development of a new recirculating unit.

This recirculating unit—featuring three-speed control—is available with ceiling or wall intake.

Said to be simple and flexible in design, as well as easy to install, the system uses any one of five Forced-Flow models or four Jet-Flow models —with as many recirculating units as desired. It's available in Btu input capacities from 25,000 to 70,000. Royal Jet., Inc., 1024 Westminister Ave., Alhambra, Calif.

Twin building block

Twin-Sul Bloc is the name of a new building material consisting of two separate blocks joined by three galvanized ¼-in. dia steel rods. This creates a 1½-in. dead air space that acts as a natural insulator. Since the blocks are said to offer a dry inside surface, it is possible to plaster directly to a Twin-Sul Bloc wall. The block is available from Bergen Building Block, Inc., Ridgefield Pk., N. J.; Concrete Specialties, Inc., Lyndhurst, N. J.; Multiplex Concrete Co., 64 Glenwood Pl., E. Orange, N. J.



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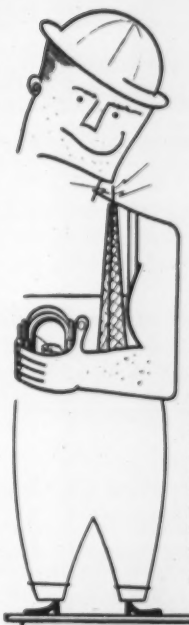

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EDITORIALS

Labor cooperation in cost cutting

THE REACTION from both the labor and the management sides of construction to calls for cooperation to hold down construction costs (ENR Feb. 11, p 21) is gratifying, and surprising only in the speed with which it has come.

What the leaders of the American Federation of Labor's Building Trades Department have proposed is joint effort to cut out wasteful practices. A spot check by this journal indicated grass-roots support from the labor side, where men are beginning to worry a little about their jobs and about holding their gains of the last few years; and support—though somewhat guarded—from the contractors.

Of course the motivating force is economic—the fear that construction could price itself out of much possible work. That's a healthy fear: No industry that must count nearly fifty percent of its costs as labor costs—and that is as vulnerable in the popular mind to the charge of wasteful practices—can afford to ignore the advantages of cooperation when they are offered.

So far recognition of the problem is confined to the higher echelons. The sooner it can penetrate to job levels the better.

Sharper estimating

TOO FREQUENTLY OF LATE engineers are being caught with their estimates down. There are always extenuating circumstances to be sure, and the degree of accuracy necessary in an estimate is variable depending upon the estimate's purpose. Yet, in the eyes of the public, estimates that hit wide of the mark have a way of reflecting on the competency of the profession.

For example, the great majority of traffic estimates for toll roads have been far under the amount of traffic that actually developed. This causes raised eyebrows and uncomplimentary comments from the man in the street. It is possible, of course, to be philosophic about this and, since the estimates are safe financially, just to continue to guard against over-estimating.

Low cost estimates, in contrast to low estimates on traffic, have the same bad effect, but in addition create problems of another kind. Thus because of a low cost estimate on its Thruway, New York State must go back to the voters and ask for a supplemental bond issue, with attendant bad publicity. Here, the estimates were recognized to be rough because there was neither sufficient time nor money to make adequate preliminary design and field studies. Rising construction costs were also a factor.

Engineers understand how estimates can go wrong under such circumstances, but the public is harder to convince. And New York officials would seem to be asking for more of the same kind of trouble if Governor Dewey is correctly quoted as saying that four other contemplated expressways would cost $1,093,500,000. This is much too definite a figure to put out at such an early date and without benefit of more detailed engineering studies.

More recently Connecticut's highway department has had a similar embarrassing experience, sparked by an independent engineering report that the proposed Greenwich-Killingly Expressway will cost $346 million instead of the $235 million figure given to the legislature by the department last year. The higher figure includes more highway than the initial estimate, but a detail like that does not keep the enemies of the present state administration from making political capital of the big difference, especially when the initial figure was 235 million, not some obviously round figure like 225 million or 250 million.

The lesson for engineers is to do as careful estimating as possible before announcing figures to the public; to resist giving public officials rough cost estimates unless they are very rough on the high side; and to insist on being allowed sufficient time and money to do preliminary engineering and make site surveys before being pinned down to "exact" estimates. Sharper estimating is in everybody's interest.

Passamaquoddy again

EXPENDITURE of $3 million for a new study of what is known as the Passamaquoddy tidal power project in Maine is authorized in a bill passed by the Senate Feb. 10 and sent to the House. Whether that action has any significance depends on several factors.

First, of course, is what the House does. But a much more fundamental consideration is the fact that Passamaquoddy Bay, by far the larger of the two bays that are needed to give the scheme any semblance of practicability, lies almost wholly in the province of New Brunswick, outside the jurisdiction of Congress. Cobscook Bay in Maine has little potential for tidal power development when taken alone. That is why the scheme sponsored by President Franklin D. Roosevelt in the Thirties foundered. Canada would not participate, and without the great storage capacity of Passamaquoddy Bay the scheme was hopelessly impracticable. With that bay, the project has intriguing possibilities if costs can be kept low enough.

In 1952 the Canadian Government took a realistic look at the Passamaquoddy project and declined to share in the cost of a restudy on the ground that the power needs of New Brunswick could be met more easily by developing more power on the St. John River. If Canada still holds to that opinion, there can be no justification for spending U. S. funds at this time on a project that must be international in character to have any chance for success.

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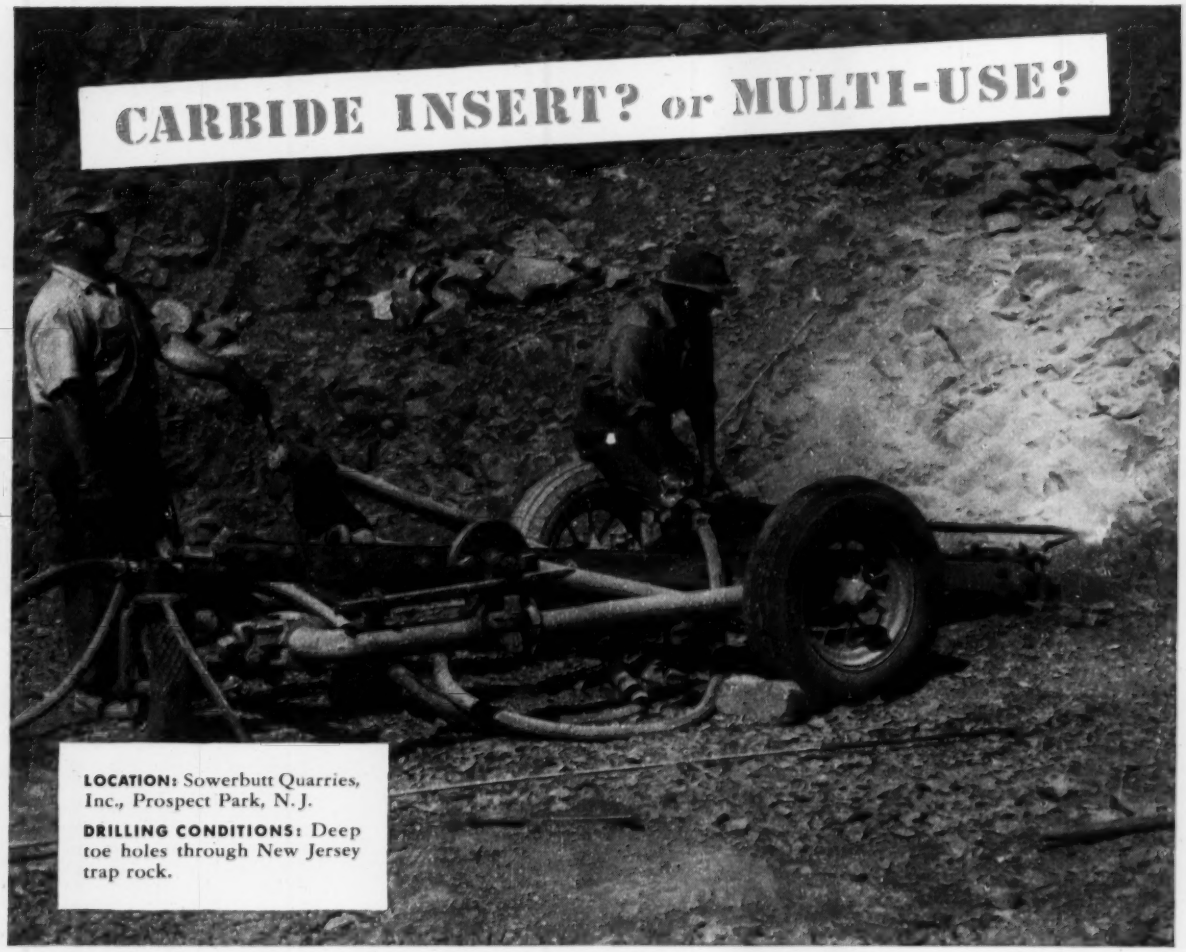
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